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ABSTRACT

Cooperative education, experiential learning, and personal knowledge are addressed in nine conference papers. Kenneth Abrahamsson considers the nature of experiential learning, the recognition of prior learning, educational design and the assessment of quality, and policy and practice for integrating learning and experience. Harry Hienemann considers the history of cooperative education, the evaluation of outcomes integrating classroom and work experience, and mandatory cooperative education at Laguardia Community College, New York. What is known about the educational effects and economic consequences of programs that recognize prior learning is reviewed by Alan P. Wagner. Solomon Arbeiter examines a model that can be used to evaluate students in programs recognizing prior learning, as well as the award of credit or advanced standing. Douglas M. Windham evaluates the economic effects of recognizing prior learning and considers the implications for institutional policy. The nature and value of relevant work experience in the education of primary school teachers is considered by Hannu Perha, followed by Staffan Larsson's review of five qualitatively different conceptions of experience as viewed by teachers. Maureen L. Pope suggests that a cultural transmission approach to teaching and knowledge dominates science education and that this has neglected the role of personal experience in the construction of knowledge. Erich Leitner examines the implications of cooperation between the University of Klagenfurt, Austria, and the Austrian Workers Union. Implications for the university pertain to the philosophy of higher education and innovations. (SW)

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Cooperative education, experiential learning and personal knowledge

By Kenneth Abrahamsson (ed.)

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COOPERATIVE EDUCATION, EXPERIENTIAL LEARNING AND PERSONAL KNOWLEDGE

By Kenneth Abrahamsson (ed.)

A selection of papers on experiential learning presented at the Vth International Conference on Higher Education, University of Lancaster, England, September 1-4, 1981

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The papers and a report from study group 4 on "Integrating learning and experiences - from policy to practice" are presented as a working document of the project "Work experience as a resource in higher education" at the R&D-unit, National Board of Universities and Colleges, Stockholm. The authors are responsible for the content, and the ideas presented do not necessarily correspond to the NBUC's policy on these issues.

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Foreword

During the first week of September 1981 I had the pleasure of acting as convener of group 4 on 'Integrating Learning and Experience - from Policy to Practice' at the Vth Conference on Higher Education at the Institute for Post-compulsory Study, University of Lancaster, England. The general theme of the conference was 'Higher education - Survival and Revival'. The conference contained plenary sessions, specific seminars and twelve study groups. With the contributors' permission I have edited a report using some of the available papers. I have also taken the opportunity of adding four papers from other related groups or seminars.

Further, I have tried to summarize some of the ideas dealt with in the group discussion. It is not always easy to find a coherent structure for a complex and sometimes confused theme. And it is even more difficult when you are participating in a heterogenous group including members not only of different nations, cultures and systems of higher education, but also a variety of meanings of such words as knowledge, experience and reflection. My own 'reflections on experience' follow the general sub-theme of the different sessions, i.e.:

1. The nature of experiential learning
2. The recognition of prior learning
3. Educational design and the assessment of quality
4. Integrating learning and experience - from policy to practice

I am sure that some members of the group would prefer other ways of structuring the discussion. However, this is my personal contribution to the 'reflection on experience'.

Stockholm, December 1981.

Kenneth Abrahamsson

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1. REFLECTIONS ON EXPERIENCE*

By Kenneth Abrahamsson

> *Of course our group was concerned to push higher education in the direction of a far greater involvement with the personal, working and community experiences of its participants, both students and staff.*
>
> *But in our industrial and media-dominated societies, much experience, both work and leisure experience, is banal and demeaning.*
>
> *Therefore we believe that higher education, which should above all be concerned with quality and integrity, must be reshaped so as to help people reflect critically on their experience, to recognize that some experiences are more intense and vital than others: and ultimately to discover how to deepen the quality of their lives and the lives of those among whom they live and work.*

What is experience? How do we learn by experience? What do we mean by experiential learning? Is there any kind of learning which is not based on experiences? Many of us would agree that experiential learning takes place when you bring work and life experiences into the classroom. Programmes of cooperative education aiming at a better interplay between different job practices and theoretical reflection could also be labelled as experiential learning. But what about reading a book? Is it a kind of experiential learning? Are messages transformed into printed words a basis for experiential learning? Or what about pictures, word-less but not worthless carriers of feelings, facts and reflections? And, are all kinds of experiences a sound basis for academic reflections? The introductory remark by Boris Ford (which was his contribution to the group report) focuses on the role of reflection as an intermediate tool between observations of things and events in reality

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*) This is a summary and a synthesis of the discussion in group 4 on "Integrating learning and experience - from policy to practice" at the Vth Lancaster-conference on Higher Education, September 1-4,1981.

and the process of learning and understanding. Some experiences are trivial or banal, says Boris Ford. Does that imply that they are not a sound basis for reflections? The trivialities of our everyday lives can, of course, be useful data in the field of sociology or in programmes of social work. But can they be used in science?

Thus, the theme of how to integrate academic learning and work experiences cannot be analyzed in isolation from educational traditions and knowledge ideals in higher education. Learning by experience has its roots in the development of society. Learning within the walls of a school system including universities and colleges has been an exception rather than a rule in the past. The common pattern was to pass on learning from one generation of craftsmen to another through apprenticeship. The development of formal schooling during last century created a new context of learning. As the educational system was growing there was a need for better links with practical realities. Thus, the idea of learning through practical work was accepted as an essential part of the formal school system. The work of Dewey and other philosophers demonstrates that experiential learning is not a "new" concept. It is, however, a concept with quite a different meaning and content in different educational quarters.

In a way, you could see the composition of participants in study group 4 as a mirror of different views on experience and experiential learning. Some participants were more interested in experiential learning as a learning phenomenon as such. Their perspective was related to clinical or humanistic psychologists like Maslow, Rogers and Kelly. They stressed the idea of learning by exploring and not only by a process of consumption of passive experiences. Learning is an act of personal commitment. Personal knowledge is important. If experiential learning is discussed in these terms it becomes necessary to focus on questions of students' influence, self-control and the definition of authority relations between teachers and students.

Another way of looking at the group theme would be to analyze how different kinds of work experiences can be linked to or

incorporated in the curriculum. My own project on the role of work experience in Swedish higher education is working in this perspective. The idea of cooperative education is another example of connecting learning and experiences. The concept of recurrent education as an organizational strategy for reshaping the total educational system is another illustration of modern educational pragmatism. Both cooperative education and recurrent education are organizational concepts, rather than contributions to the philosophy of higher learning. This does not mean, however, that there necessarily are contradictions between organizational and individual ways of looking at learning through experiences.

To sum up, the concept of experiential learning has to be defined by, at least the following criteria:

1. *Active exploration of reality*

   Experiential learning is learning through active exploring of reality. By direct contact with reality both inside and outside the classroom the student can test his or her assumptions and models.

2. *Critical reflection on experiences*

   The learner must reflect on his experiences in relation to certain ideas, values or perspectives. All experiences cannot be useful parts in the process of understanding.

3. *The experiences must have some personal validity*

   The learner must have a personal commitment to the process of learning and exploring. He must be ready to challenge his own ideas, values and conceptions in order to learn new ideas, perspectives and applications.

4. *Freedom and authority must work together*

   Some advocates of experiential learning seem to stress the need for learner-controlled learning. Undoubtedly, experiential learning calls for a new definition of the teachers' and students' roles. The teaching-learning process cannot only be a passive transmission of information from one part to another. On the other hand, learning is not solely a student-controlled business. It is the teacher's task to stimulate the student's feeling of authority of knowledge, rather than authority of persons.

5. *Field of application*

   It is common to discuss experiential learning in the context

of bringing experiences from life and society into the classroom. In general, experiential learning does not necessarily have to take place outside the classroom or the more or less symbolic walls of a school. It seems practical, however, to distinguish between four kinds of experiential learning:

a) experiential learning as everyday learning in general (in different life roles, on-the-job learning etc)

b) experiential learning as the student's prior learning before entering a programme of higher education (i. e. the idea of recognizing prior learning (RPL), and shortened programmes of study)

c) experiential learning as college-sponsored periods of practical training within a certain study programme (e g work-study programmes, periods of practical training for engineers or social workers etc)

d) experiential learning as a part of school work as such

I am not quite satisfied with the five criteria of experiential learning. It is easy to agree on the need for student's actively exploring reality. The same goes for the crucial function of critical reflection in the process of learning. But to what extent can these ideals have a strong impact on the educational reality in our schools of higher learning? There seems to be restricted time both for exploring and reflection. As a consequence of mass higher education and the industrialization of the educational sector, it is more efficient to transmit pre-fabricated knowledge and take ideas for granted than to allow the student's exploratory behaviour or the use of critical reflection to disturb the production process.

On the surface, we can also reach an agreement on the important role of the student's own commitment and on the personal validity of his studies. The combination of exploration and reflection, however, are intellectual constraints on personal validity on the one hand and scientific validity on the other. No society has the economic and educational resources to let people only study what has a private and personal validity for them. Personal needs have to be balanced against the public and societal demands. And, the knowledge dealt with in the system of higher education

must also have some kind of scientific validity. The three faces of validity exist both at the individual level and at the system level. The mechanism to balance these interests varies from country to country, depending on traditions of state intervention or market solutions. Aside from these variations, however, it is necessary to relate personal validity to scientific and societal validity.

The problem of freedom and authority is also difficult to treat. It seems to me that authority in experiential learning has both a surface and a depth-dimension. On the surface level, we often stress the need to increase the student influence on both planning and learning. In practice, however, teachers tend to define the more or less invisible frame factors and context of learning. Thus, both teachers and students are met by double messages on who decides or controls studies. The group discussion concerning authority and influence stresses the need for a further analysis of these concepts and their relation to experiential learning.

A metaphor often used in the group was the university as a "storehouse of knowledge and wisdom". It is obviously an ambiguous metaphor. A storehouse is by definition "a building for storing goods as provisions", "an abundant supply or source": (Webster 1971, p. 2252), but it can also be a boundless collection of sensations, experiences and ideas. Thus it is both a modern market place for products fabricated somewhere else and an intellectual process of observation, reflection and interpretation. The students can be seen as consumers on a market of knowledge and professional legitimation. On the other hand it is evident that the intellectual products and the thought patterns provided are carriers of certain knowledge, traditions of academic reflection and professional skills. The student does not always have to invent or construct his own bicycle. A modern society with an advanced technology, professionalization and a specialized labour market cannot be built on self-made products made by self-made men (or nowadays also women). There is a difference, however, between understanding the mechanics of different aspects of your own bicycle and constructing one. Pre-fabricated knowledge and models can, like a good bicycle, be tested and modified in reality. Thus,

buying a bicycle can be an opening to an act of experiential learning. But it can also be a vehicle for individual transport and mobility in space. Thus, a storehouse has to be valued in relation to how its products are produced, and also to how they are used by different people. The same goes for knowledge and experiences.

2. The recognition of prior life experiences

The use of the student's prior experiences in higher education is a broad phenomen, including at least four different aspects:

a) *How can work experience be beneficial to the individual student's vocational choice and development?*

b) *To what extent can the recognition of prior experiences be used for an individually designed and sometimes shortened study programme?*

c) *How can prior work experience be used as an additional merit, or an alternative route to higher education?*

d) *In which ways can the students' life and work experiences be an individual or a collective resource in the learning process?*

The planning of higher education more or less takes for granted that prior work experience is beneficial to the individual student. According to Perho's study, the student's motive for going out working seems more important than the work or work content as such. In theory and maybe also in educational planning it could be possible to point out what fields of working life could be linked to different programmes. In practice, however, the question of relevant experience varies from person to person and from field to field. One tool for implementing recurrent education in the Swedish reform of higher education has been to insert a period of work as a non-compulsory additional entrance merit. It has been necessary for the majority of students to have some work experience in order to be admitted to a study programme with a restricted number of places.

We lack knowledge, however, of how the work period has influenced the students' vocational choice and motivation for study. We also

lack knowledge of what kind of learning has taken place during these work periods. No mechanism to train or stimulate the students to reflect critically over their experiences has been built in. The only criterion used in the Swedish model is duration of employment. In general, the group participants wanted to de-mystify the concept of prior life experience and its individual functions. One way of making individual experiences more useful would be to stimulate working students to keep a journal or a diary. Another way could be a written life history focussing on the individual value of work experiences. It is a truism to say that reading books also can be a useful way of dealing with job experiences.

If we extend the scope of this discussion we have to ask "what is new about prior experiences" (related to work or life roles)? Some group members were critical of a too narrow or restricted definition of experience? Why work experience? Why not experiences of growing up as an individual person, a member of different groups or a carrier of shared norms, values and ideals? Why "here and now"-experiences? Why not all life experiences? If we broaden the perspective it is easy to find links to the post-war discussion on educational and vocational choice, the process of socialization and, also, ideas about and methods of career guidance and individual support. One conclusion from this discussion is, that we cannot only consider the intended effects of linking work and education. Attention also has to be given to the direct or indirect effects on students' educational and vocational choice and there motivation for both work and study. Thus, it is necessary to develop a perspective which also builds on socialization theory.

The problem of recognizing prior experiences in relation to the provision of study programmes and courses is of quite another character. As these problems were dealt with in another seminar at the conference, I will only comment on them briefly. The idea of matching the individual qualification profile with an individually designed combination of courses challenges the flexibility of any educational system. It is difficult to apply the idea in the Swedish setting, where you are admitted to a

study programme and not to a university or college. In some fields, e g nurses and pre-school teachers, we have shortened programmes for applicants with relevant work experience. In general, however, the programmes are designed according to the idea of a core curriculum with limited possibilities of individual adaptation. The North-American idea of recognizing prior learning (RPL) is built on three ideas:

a) *the student is admitted to a college or university, and not to a study programme*

b) *the student's qualifications and experiences have to be assessed in a formal or informal sense. Thus, the use of tests and interviews is a common part of the RPL-movement. The most common tests are Advanced placement program (APP) and College-level examination-program (CLEP)*

c) *the matching of the individual profile and courses provided calls for flexibility both in educational design and methods of individual support*

The seminar included three contributions on the problems of recognizing prior learning (RPL): the economics of RPL-programmes, educational implications and a research programme on RPL-problems. As always, we find differences between ideals and realities. In general one could say that RPL-programmes can be beneficial both to the individual and to society. In practice it seems difficult to judge if RPL-programmes are less expensive, more efficient and less time-demanding for the student. A comparison between the Swedish model and the RPL-method calls for further attention to the influence of admission systems and curriculum structure on the individual process of educational and vocational choice. What are the consequences for the individual and for the educational institution if the student is admitted to a university or college instead of to a programme? What differences in predictive value and influence on the learning process follow from a selection based upon marks from upper secondary schools and vaguely defined work experience instead of different forms of entrance tests? What kind of balance between social justice and educational relevance is developed in the various cases?

It seems to me that there is a similarity between the discussion on "relevant experience" and the RPL-movement. The shared problem

concerns the difficulties of assessing the quality of learning in general and experiences in particular. What kind of experiences are relevant for what kind of purposes? What kind of influence will experiential learning and the recognition of prior experiences have on higher education as such? How can they be related to the notion of high culture in traditional universities? It seems to me that the use of prior experiences from work or life roles is broadening the concept of higher education, thereby making its borders with other societal processes more vague and un-specific.

The use of work experience as an additional merit or an alternative route to higher education is a typical Swedish problem. It is dealt with rather extensively in another project in the Swedish follow-up programme of the reform of higher education (Kim). The fourth aspect mentioned, the use of work experience as a resource in the educational process, is the main focus on my own project (Abrahamsson, 1981). It is also treated in the workshop contributions on cooperative education.

3. Educational design and the assessment of quality

Programmes of cooperative education are designed with the specific purpose of integrating academic learning and work experience. The idea of cooperative education was born in the beginning of this century by the work of Herman Schneider at the College of engineering at University of Cincinnati. Paradoxically, it reached the age of retirement before it had a strong impact in U.S. higher education policy. As a consequence of a selective federal support from the beginning of the Seventies, programmes of cooperative education are available at more than one thousand universities and colleges in U.S.A. Thus, it has been a successful federal intervention in the field of higher education and working life. In general, programmes of cooperative education are only a part of the full degree programme. The process of implementation illustrates the traditional obstacles to change within universities and colleges. There has not only been scepticism and resistance among faculty and teachers. In many cases, the students have not felt motivated to go out to

different work places. Periods of practical training at different work places do not seem to give the same academic merit and prestige as traditional subjects.

The reports on cooperative education also gave a number of examples of instructional methods and practical solutions to develop effective links between work and education. The TAR acronym illustrates the three-step process of integration:

a) Teaching concepts in the classroom

b) Application of these concepts while on the cooperative education work assignment

c) Reinforcement and Reflection on these concepts by means of an evening seminar taken concurrently with the work experience

In order to support this process faculty has developed field manuals and learning guides for students.

Knowledge ideals, faculty attitudes and discipline cultures are apparently crucial factors for the survival or revival of ideas of experiential learning and cooperative education. In a Swedish study on teachers in upper secondary adult education, the following experience-functions, were found:

A. Experiences that can be used in teaching are experiences which one or a few students have made and which can be used as information to the rest of the class.

B. Experiences that can be used in teaching are experiences which most students in the class have had and which can be used to direct the students' attention to the relevant context while a subject is being taught.

C. Job experience can develop practical knowledge which the students may use in the educational context.

D. The student brings into the classroom an outlook on the world that is in conflict with the view of the subject taught.

E. Experiences from life give a certain capacity in empathy that makes it possible for the adult student to understand different perspectives as serious alternatives.

These were the variations in qualitatively different conceptions of experience as perceived by the teachers.

Efforts to link work experiences to academic learning are filtered through faculty attitudes and the character of subject content. As has been stressed elsewhere (Abrahamsson, 1981), different academic perspectives contain different views on the role of work experience in higher education. The same goes for the group discussion on experiential learning and integrating learning and experiences. Who is interested in integrating academic learning and work experience? Who is interested in linking some kind of ear-marked work experience with different subject fields in higher education? The group could not reach an agreement on this problem. Some members stressed that need, while others tended to neglect the problem as such.

The problem of building bridges between higher education and working life cannot simply be answered by "yes" or "no". It also depends on under what conditions the bridges could be built. What points of departure do we choose? The structure of knowledge in different subject areas? Faculty attitudes and discipline cultures? Available methods of teaching? The experiential background of the students? There is, of course, an important difference between connecting more or less anecdotical students experiences to the subject matter, or taking the students' experiential background and qualifications as the major basis for programme design. The former alternative can be exemplified by the idea of using life and work experience as a resource in higher education. The latter aspect is illustrated by the North-American efforts to recognize prior experiences (RPL). Whatever the point of departure, the process of intellectual reflection seems to be a crucial component of experiential learning.

But what is reflection? And what is critical thinking? To what extent shall we provide the students with learning guides and study methods facilitating the act of reflection? The TAR-approach in cooperative education used student guides in the form of questionnaires on the social and cultural anthropology of work. But to what extent can critical reflection be guided? Is not the idea of critical reflection that the student ought to be able to put the questions himself? As usual, ideals and realities do not always meet. In the didactic process, we have to develop

different tools and methods in order to train the student to be more independent in his own thinking and reflection. These tools can be more or less structured. According to Halldén (1980) there are at least four different teaching strategies:

1) *A teaching strategy based on authority and a structured and stepwise relation to subject content*

2) *A teaching strategy based on authority and a more general relation to subject matter emphasizing principles*

3) *An emancipatory teaching strategy aiming at spontaneous exploration of subject matter*

4) *An emancipatory teaching strategy aiming at analysis and critical reflection*

What is the role of experience in these different approaches? The first and second approach are content-based on the dimension from specific to general. The third and fourth strategies focus more on the process of exploration and critical thinking as such. Thus, they are more experiential by definition. In practice, the different approaches can function side by side. The difficult problem, however, is to what extent they are influenced by the objectives, knowledge content and subject matter in different study programmes. Are strategies one and two more suitable for science and other subjects with a hard knowledge core, while methods three and four can be more applicable in softer subjects like behavioural science or vocationally oriented programmes such as social work.

It seems to me that different conceptions of experience imply different views on the role of experience in higher education. Experiential perspectives incorporating Kelly's ideas on personal contruct theory and personal knowledge underline the importance of exploratory learning and personal commitment even in science (Pope, 1981). Thus, we are back to where we started. What do we mean by experience? What is learning by experience? And is experiential learning some other kind of learning than learning in general? It seems to me that we could not reach (and maybe nobody can) a definite answer to these questions. Among the different views on experiential learning dealt with in the group

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I would like to contrast an individual-existential approach and a social-pragmatic way of looking at these problems. Another way of using these labels is to contrast the goal of personal development of the individual learner with the needs and demands from different collectivities or the society as a whole.

4. Integrating learning and experience - from policy to practice

The theme of the group work was "Integrating learning and experience - from policy to practice". There was little time for exploring the policy dimension and the problems of implementation. In general one could say, however, that concepts like work experience, experiential learning and cooperative education play important roles in the policy process. Unfortunately, we lack knowledge on what assumptions about learning are more or less implicit in the policy process. It is no exaggeration to say that the policy process often contains a technified view on learning. The students experiential background and work experience are made into products or things, which can be added to the educational mix of subject courses in a specific curriculum. As one group member said "how many kilos of work experience do we have to add to this programme..". The conceptions or misconceptions in the policy process have relevance not only to work experience as such, but even to student learning in general. The plenary session of the Lancaster conference gave enough evidence on the problems of relating research on student learning to the policy process as such. But what is higher education if not student learning? What is the use of structures or super-structures if they have no relation to the generation of knowledge both in the research process and in student learning?

Comparative studies on work-study connections in different countries could be one way to continue the discussion. There are a number of interesting examples of national cases that could be illuminated and analyzed. The cultural revolution in China is, of course, a very interesting case. Teachers and professors were more or less forced to go out in working life, while students and workers occupied departments of higher learning. Today, we know that the idea of mass participation both in universities and

colleges and in working life did not only have positive effects. Rather, it has had a severe impact on the generation of new knowledge within different subjects and disciplines. Some departments had to close for a period of between five to ten years. Another interesting example mentioned in the discussion was a Soviet policy in the Fifties to stimulate young students to go out and work prior to higher studies. The reason for changing this policy and implementing a more elitist system was that the student seemed to lose motivation for learning, when they knew that they did not have to continue with their studies. Thus, questions of study motivation and the preservation of cognitive skills and theoretical knowledge have to be taken into consideration when we discuss linkages between comprehensive schools, working life and higher education.

The Swedish reform of higher education in 1977 might be seen as mid-way between the ideologically and politically motivated Chinese cultural revolution and the more pragmatic North-American experiment with cooperative education. One of the main concepts in the Swedish reform is recurrent education, i.e. the organization of the educational system in a way that aims at a better alternation between education, work and other life roles through the individuals' total life span. The concept of work experience played and still plays an important role in the Swedish system of higher education, as it is both an additional merit for young students and an alternative route to higher education for adults. In an international perspective, it is interesting to note that the Swedish discussion on work experience has mainly dealt with the students' prior work experiences and their role in the social selection and admission to different programmes. Questions of social justice and educational equality have been given much more attention than problems of using work experiences in different programmes or the relevance of learning as such.

It is too early to analyze the outcome of the Swedish reform of higher education. The follow-up programme at the National Board of Universities and Colleges is now in a final phase. A concluding report from projects on recurrent education, work experience, educational design and admission systems will appear next year.

It will be difficult, however, to define and specify a set of criteria that could be used as points of departures for the final analysis. Partly this depends on the character of the follow-up programme. It is not only result-oriented, but also stresses the need for continous institutional change and self-evaluation. In part, the problems of defining criteria are a consequence of the fact that the Swedish system of higher education has to maintain different and sometimes contradictory goals at the same time. It would be easier to evaluate the reform in relation to the British university notion of high culture, or the North-American idea of increasing the number of cooperative education programmes.

It is a truism to say that you can learn much about your country by going abroad. A process of understanding and reflection is taking place when you see your own system in another context. Maybe that is what experiential learning is about? Seeing yourself and your experiences in another context, and thereby deepening your understanding and reflection. But it takes time to see yourself in a foreign mirror. Seeing and understanding is more than just perception. Having been there does not necessarily imply that you know. Maybe we can find some use for William James' traditional distinction between <u>being acquainted with</u> and <u>knowing</u>. Not all visitors to the storehouse are interested in <u>knowing</u>. Rather they want to be acquainted with the products or to use them for their own personal benefits and careers. The dualism of understanding and criticial reflection on the one hand and personal benefits and individual careers on the other is, of course, a contradiction in every system of higher education.

It also raises one crucial aspect of experience and experiential learning. In what ways can educational systems be designed so that they increase and support the students' capacity to reflect on their own experiences. And, to what extent is student motivation for study influenced by external factors like the labour market, societal crises and economic stagnation and social and financial support rather than by educational design and didactic methods? There was neither time nor space to discuss these

questions in study group 4. Discussions in other groups showed, however, the importance of broadening the perspective on experiential learning to include socialization theory. If, as Perho pointed out, the students motives for going out working are more important than the work content as such, policies of linking work and education have to be reconsidered. As a consequence, we also have to clarify what we mean by quality of learning, both inside and outside the classroom or lecture hall.

Our group did not reach any general agreement on the conference theme of "Survival and revival". My own conclusion is, however, that neither survival nor revival will benefit from too loose or vague a definition of experience. In a broad sense, one could say that the purpose of all educational endeavours is to stimulate the students to reflect on their own experiences. In practice, there seems to be little room for exploration and critical reflection. Maybe the survival and revival of our systems of higher education depend on their capacity to meet this challenge.

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Study Group 4 : Integrating
Learning and Experiences -
from Policy to Practise

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2. COOPERATIVE EDUCATION - INTEGRATING WORK AND LEARNING

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Cooperative education is a form of experiential education which extends the learning process into the workplace. Students alternate between specific periods of attendance at the college and specific periods of employment. This format thereby provides the opportunity of integrating classroom theory with its application in the workplace.

Over the years, a number of models have evolved. In general, most programs have the following characteristics:

1. the work experience is productive and is considered an essential part of the overall educative process.

2. the work assignments are related to the student's field of study and/or the student's career interests.

3. the concept of alternation provides students with more than one period of supervised employment which must be of sufficient length to enable students to have a full learning experience while making it economically and practically feasible to employers.

4. minimum performance standards and assessment techniques are integral to the program especially where academic credit is provided and/or where co-operative education is a degree requirement.

5. the work experiences should progress in complexity and responsibility matching the student's academic progress.

History of Cooperative Education

Herman Schneider has been credited with instituting the first cooperative education program in the United States in 1906. The program began at the College of Engineering at the University of Cincinnati. Since then, there have been three periods of rapid growth. The first period lasted until 1920 and was based on the success reported by the University of Cincinnati. Many of the institutions which

have been identified with cooperative education initiated programs during this period. These include Northeastern University (1909), Drexel University (1919), and the Massachusetts Institute of Technology (1919). As at the University of Cincinnati, in each of these institutions cooperative education began in the Engineering Department. It was only in 1921 that Antioch College inaugurated a program in the liberal arts area.

By 1960 there were still only 65 institutions of higher education offering cooperative education. During the 1960's, the second period, approximately 150 institutions began new programs. However, the largest growth spur occurred in the 1970's as a direct result of Federal legislation.

The Higher Education Act of 1965, as amended in 1976 and 1978, provides funds to plan and implement new programs as well as expand and strengthen existing programs. In addition, the legislation provides funds for research, training of educators and employers and support of "demonstration" projects. The latter are of two types (a) grants for the development and implementation of comprehensive cooperative education programs where a substantial percentage of the student population will become involved with cooperative education and (b) grants for special projects which explore the feasibility of cooperative education to address the special needs or problems.

In 1980 just under 15 million dollars were obligated under this legislation. The funds were awarded to 251 colleges totaling almost 12 million dollars for support of cooperative education programs, $787,000 to support 14 training centers, $213,000 supporting research projects and 2 million dollars to 3 institutions for comprehensive demonstration grants.

With this stimulative effort, the numbers of cooperative education programs in 1980 according to the Cooperative Education Research Center at Northeastern University grew to 1,028 of which 473 are located in 2-year colleges and 555 in 4-year colleges and universities. Approximately 200,000

students were enrolled in cooperative education.

Evaluation of Outcome

Two national studies on the impact of cooperative education have been conducted. The first conducted by Wilson and Lyons (1) reported the following benefits from cooperative education:

-through the coordination of the work experience with campus study, theory and practice are more closely related.

-through the integration of work and study, student motivation increases.

-as a result of the work experience, students develop a greater sense of responsibility, greater dependence on their own judgments and increased maturity.

-students gain a greater understanding of other people and develop better human-relation skills.

-as they become oriented to the world of work, students obtain knowledge about career opportunities and the requirements for being successful.

-the earnings from the cooperative education work experience allow many students to attend college who might otherwise have been excluded for financial reasons.

In addition, the study suggests that:

-cooperative education programs help keep faculty abreast of their discipline as well as establishing contact with the private sector.

-in large programs, where significant numbers of students are away from the institution at any one time, the cooperative plan permits more efficient utilization of facilities.

The second study was mandated by the Congress of the United States as an assessment of the impact being achieved by Federal legislation (2). Data

were collected from educators, employers, students and graduates who have been involved in cooperative education. A control group of non-cooperative education participants was incorporated in the design of the study.

Some of the key findings from this national assessment are:

-cooperative education is endorsed by participating institutions, employers, and students.

-participation in cooperative education contributes significantly to career preparation of students.

-cooperative education is a mechanism of financial aid.

-cooperative education is cost-effective for both students and employers.

-cooperative education constitutes a program course for the institutions of higher education.

Other conclusions are:

-the Higher Education Act has made a significant contribution to the national expansion of cooperative education.

-it was a sound legislative decision to support cooperative education through direct grants to the institutions of higher education rather than providing additional scholarship or loan funds to students or by subsidizing employers. The Federal investment in cooperative education was, at the time of the study, more cost-effective than the student loan program.

-future prospects for the continued expansion of cooperative education are good.

Program Characteristics

Institutions of higher education have developed an array of program models for integrating the work and school experience.

Placement Patterns. There are 3 general types of placement patterns. In the full-time alternating pattern, students are divided into two, and at

times 3 cohorts. As one group of students works full-time off campus, the other(s) are engaged in full-time study at the institution. Students will have at least 2 work experiences, and, in some programs, there may be as many as 4.

With a parallel pattern, the students attend classes part of the day and are on their cooperative education work assignments during the other part. The variation of this pattern is an alternating day model where students attend class one day and work the next. Community colleges tend to favor the parallel model. Under this arrangement, the student is always a part-time employee, although he/she may be enrolled at the college as either a full-time or part-time student.

The third, and least used, is the field pattern where students leave campus for some specified period of time at least once during their period of under-graduate studies - but no more than once in any given year.

Diversity of Placements. Some institutions maintain a policy where students are expected to be with the same employer for all their placements. The rationale given is that there is a greater likelihood for a sequential increase in the complexity of the job assignment and concomitant responsibility. Other institutions prefer to have students work with different employers on each assignment thereby providing diversified experiences. In most instances, however, institutions tend to allow both options.

Organizational Structure. Departments of Cooperative Education can be found in both the student services area or the academic area. In recent years, the trend has been to locating cooperative education in the academic unit especially when credit is provided for the cooperative education experience.

In general, responsibility for the cooperative education program is centralized. In the very large programs, such as Northeastern University and

LaGuardia Community College, the cooperative education activity is organized as a separate Division headed by a senior administrator. The professional staff responsible for cooperative education have faculty status. Such programs are the exception. Most programs do have a Department of Cooperative Education responsible for the administrative functions associated with the program. The guiding of student learning and the evaluation of learning is the reponsibility of faculty from the participating departments. There are some institutions that have completely decentralized cooperative education making each department involved in the program assume total responsibility including the development of jobs and the placement of students.

Student Participation. A small number of institutions has cooperative education mandatory for all students majoring in participating departments. At this point though, these are by far the exception. The vast majority of colleges have cooperative education as an option. Many of these programs are selective with students having to meet certain levels of academic performance before they are accepted.

Awarding Academic Credit. Only recently has academic credit been awarded for cooperative education. As recently as 1969, according to Wilson, only 14 percent of cooperative education programs provided credit (3). By 1978, just about two-thirds of the thousand plus programs provide credit. In most instances, these credits are non-additive in the sense that they are accepted by the department as counting towards the numbers of credits required for the degree. The medium number of credits provided is 3 for any one cooperative education experience. In some programs however, students receive as many as 9 credits for a single cooperative education experience.

Integrating the Classroom and Work Experiences. Two basic techniques have evolved that link the classroom and work experience and provide a mechanism for evaluating the student learning. These techniques are learning contracts and linking the cooperative work experience to a specific course or series of courses.

Learning contracts are an agreement among the student, the faculty, and at times the employer on the learning goals that the student is expected to achieve and for which he/she will be evaluated. One form of the learning contract, and one that is used particularly at community colleges, uses measurable behavioral objectives. Each objective in the contract specifies, in measurable terms, what the student will achieve, the time frame for attaining the objective and the method of measurement. A substantially different approach to learning contracts is having the student submit a proposal for the project or paper that will be completed during the cooperative education work experience. This may include a review of the literature. In effect, this approach closely resembles a traditional field research project.

A number of institutions have begun to link the cooperative education experience to a course(s) that either already exists in the discipline or has been especially developed for the program. The class provides the cognitive base for student learning on the work assignment. In some instances, the class is offered concurrently with the work experience. In other instances, the work experience follows the completion of the class. The evaluation technique used can be a paper or a project.

Other techniques used to evaluate a student's cooperative education experience include employer evaluations, evaluations by the cooperative education

staff member visiting the student at the job site, and/or a student self-evaluation. Still another technique used are training agreements between the employer and the educational institution that commits the employer to a specific job description that specifies the tasks the student will perform. Some institutions use training agreements together with the number of hours that a student works to determine the number of credits to be awarded.

A CASE STUDY OF A MANDATORY COOPERATIVE EDUCATION COLLEGE - LAGUARDIA COMMUNITY COLLEGE

LaGuardia Community College has pioneered cooperative education as the primary educational strategy for serving non-traditional, inner-city students. This institution, which opened in 1970 with less than 600 students was established on a mandatory cooperative education basis to include all full-time students in all disciplines. In the first ten years of operation, the college has grown ten-fold, now enrolling more than 6,500 full-time students. This growth has occurred in the face of dwindling enrollments at other colleges of the City University of New York.

A demographic study of freshmen in 1978 provides some background on the characteristics of the LaGuardia Community College student. The majority of freshmen were under 21 years of age, more than 75 percent belonged to a minority racial or ethnic group, and almost 70 percent were women. About one-fourth of the students were foreign born, and almost one student in three reported that English was not the primary language spoken at home. The median family income was about $7700 per year, placing students in the lower-income strata of persons residing in New York City. Most working parents of freshmen were employed in blue-collar, service, semi-skilled, or unskilled jobs. The majority of parents had no formal schooling beyond the high school level.

Relatively few freshmen did well in high school and about 80 percent required at least some basic education-skill remediation. Their primary reason for going to college was to improve their economic status. As a community college committed to "comprehensiveness", LaGuardia offers programs that enable students to transfer to senior colleges as well as programs that prepare students for entry into the labor market upon completion of their two-year degree (4).

The cooperative education program that has evolved over the college's brief existence has many components designed to provide students with structure and with a close interaction with the faculty coordinator. Appendix A provides a brief overview of the LaGuardia cooperative education program. At LaGuardia Community College, cooperative education is offered in an alternating format. Although it is mandatory for all full-time students, it is optional for all part-time evening students. For the former, students must successfully complete 3, three-month cooperative education work experiences for which a total of 9 academic credit units is awarded. The specific goals of the LaGuardia cooperative education program are that students will (1)apply knowledge learned in the classroom, (2)explore and reality-test career options, (3)clarify work values through an improved understanding of themselves and the work environment, and (4)have an experience that promotes personal growth and development.

Over the years, LaGuardia has focused on developing structural linkages between the work and classroom experience. Conceptually, the learning potential inherent in a cooperative education placement is seen as including both the work activity as well as the environment in which the work takes place. An instructional system to integrate the two components has been developed and given the acronym TAR -- Teaching of concepts in the classroom, subsequent Application of these concepts while on the cooperative education work assignment, and Reinforcement and Reflection of these concepts by means of an evening seminar taken concurrently with the work experience. Field manuals have been developed by faculty which guide student learning and which include assignments that directly reflect concepts that have been initially taught in classes the student has taken. Appendix B is the field manual developed for the anthro-

pology section of the Introduction to Social Science course to which the first cooperative education placement of liberal arts majors is tied. The course is an overview of the social science disciplines. Therefore, similar sections have been prepared for sociology, psychology, history, political science and economics.

Since 1973, data have been collected on the labor market performance of LaGuardia graduates, including their starting salaries. In 1978 and 1980 information on current salaries and job positions were also collected about prior graduates. The 1980 longitudinal survey is presented in Appendix C. These data show that graduates are doing well as measured by their performance in the labor market. Over time, graduates are moving into positions of greater authority and responsibility.

LaGuardia Community College also houses an alternative high school on its campus--the Middle College High School. Its primary mission is to keep in school those youngsters who have been previously identified as probable drop-outs. The high school requires one cooperative education experience (on either a full-time or part-time alternating basis) for each of the three years students attend the Middle College. The Middle College has achieved significant results which its administration believes is in large part due to the cooperative education program. Thus, for example, despite a high-risk student population, the average daily attendance rate is about 84 percent, significantly higher than the New York Citywide average. The attrition rate is less than 20 percent--an impresaive statistic for a population that has been characterized as probable non-persisters and one that compares very favorably with the Citywide rate of 50 percent. Approximately 85 percent of the graduates go on to higher education.

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4. Comprehensiveness is the big philosophical concept which distinguishes community colleges from other institutions of higher education. The term incorporates these characteristics: open admissions policy providing entry to all students regardless of qualifications; diverse curricula including remediation programs for students with inadequate educational skills; transfer programs for those interested in the baccalaureate degree; career programs for students interested in entering the labor market with a two-year (associate) degree; a strong emphasis on counseling and advising support services; and a broad community service and continuing education programs designed to meet the needs of adults in the geographic area served.

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Seminar paper

3. A RESEARCH AGENDA FOR 'RPL' PROGRAMS

by

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Abstract

This paper reviews what is known about the educational effects and economic consequences of RPL programs. Available research provides little information on the extent to which RPL encourages individuals to enroll, to choose among institutions, or to choose a specific field of study. Moreover, most studies addressing the economic consequences of RPL are seriously flawed. Four projects, in process and proposed, would provide some of the information necessary for a more reasoned appraisal of the economic and educational implications of RPL.

In 1981, an estimated one million individuals will participate in programs which effectively award academic credit by recognizing prior learning. These programs range from credit or placement by examination (the largest in volume) to credit through assessment of portfolio materials. As an alternate means of assessing competencies, these programs can greatly influence the decisions of individuals, institutions, and state educational agencies. Yet, after more than a decade of extensive experience with RPL programs, we still know very little about how these programs affect decisions and the magnitude of the financial costs and benefits from the programs.

The purpose of this paper is to critically review the extant research findings on the effects of and economic consequences of RPL programs. Sections I through IV below consider the effects of RPL programs on enrollment and attendance decisions of program participants. These effects include induced enrollment, time-shortened degrees, changes in field of study and course selection choices, and improved retention. The enrollment and attendance effects of RPL programs imply potential financial gains or losses to program participants, their institutions, and the states which subsidize their continued matriculation. Studies which have attempted to gauge the size of these financial impacts are reviewed as well. Section IV contains a review of available research on the costs of implementing RPL programs.[1]

No attempt is made to evaluate studies on the quality of RPL programs: in short, the programs are assumed to provide accurate assessments of prior learning.[2] Further, the effects of RPL programs on later economic and career successes are not considered here. The latter effects really raise the issue of whether, and to what extent, the content of academic programs contributes to learning and to later earnings (the "screening" hypothesis).[3] Finally, this paper ignores several other methods used to recognize prior learning, such as skipping the senior year of high school or simultaneous enrollment in high school and college courses. These programs tend to be modest in size, partly because they are available to a small segment of the population.[4]

Several generalizations emerge from this review of research on the effects of RPL.

First, the majority of the studies have been conducted at institutions. In some cases, this leads to conflicting results (perhaps due to untested differences in student clientele or the institutional academic setting). Moreover, the institutional focus precludes an adequate examination of the effect of RPL programs on the decision to enroll (particularly among groups not traditionally served by higher education), the decision to choose a particular institution, and the ability to transfer credits. These shortcomings are important, because the case for public support of RPL programs can be made, in part, on their ability to induce non-traditional enrollments.

Second, studies of the financial effects of RPL programs are, in most instances, seriously flawed. Many assume time-shortening or course selection responses of RPL participants that, in fact, do not occur. Potential financial effects from improved retention of students are simply ignored. When the presumed responses of recipients of RPL credit have been used to obtain dollar estimates of the effects, most studies employ naive, incorrect assumptions about tuition schedules and state funding mechanisms. Further, they do not consider how institutions combine staff and physical resources to provide instruction. The latter critically affects the size of potential cost savings from offering fewer classes at the margin.

Third, as Valley (1980) and the authors of papers in Valley (1978) indicate, most studies are quite dated and many are unpublished.

Finally, while research on the subsequent academic performance of successful RPL candidates has appeared, very little research on the differences in economic "outcomes" such as employment and earnings resulting from participation in RPL programs is available.

The paper concludes with an assessment of current and proposed research initiatives. In particular, I consider the extent to which the proposed work will overcome the weaknesses revealed in prior research and I suggest additional lines of inquiry to address still unanswered questions on the effects of RPL programs.

I. Induced Enrollment

Do RPL programs encourage individuals who otherwise would not enroll to do so (and at which institutions)?

Although many assert that credit by exam programs have encouraged enrollments, the evidence is very tenuous. Buckner and Cox (1974), Fagin (1971), and Burnette (1971) assert, with anecdotal evidence, that adults do enroll in response to successful participation in RPL programs. About a third (29.9 percent) of a follow-up survey of successful test takers at Metropolitan State College indicated the RPL option affected their decision to pursue postsecondary education (Kennedy 1976). However, Furlong's survey of public school administrators in Florida revealed a relatively small share (30 to 40 percent) who believed credit by examination brought in new students (1977). A survey of state policy makers also revealed some skepticism about the use of programs affording time-shortened degrees (Smart and Evans 1977).

Most RPL programs are intended to attract non-traditional students: adults, spouses, employed individuals who cannot affort the time or dollar cost of a regular course registration. However, data from the College Board and the National Longitudinal Study of the High School Class of 1972 seem to indicate that RPL programs serve individuals who might have enrolled without the RPL option. College-Level Examination Program (CLEP) data show that over 75 percent of those receiving credit are already enrolled full-time (Shea and Grandy 1977). Barely 60 percent are above age 18 when they sit for the exams (Shea 1977). As shown in Table 1, participants in RPL programs from a national sample of 20 year olds tend to be white, female, and from high SES households.[5] The 1974 survey also reveals about 4 percent had taken college-level courses while in high school, 6 percent received advanced placement, and 9 percent received credit through a special examination (eg., CLEP). A 1979 survey of admissions practices shows somewhat higher percentages receiving credit or advanced placement, ranging from an estimated 15-16 percent of entering freshmen at four-year colleges to 10-11 percent at two-year institutions (Van Dusen 1980).

Taken together, these findings provide little evidence to indicate an increase in enrollments, particularly from groups not traditionally served by higher education, as a result of RPL programs.

There does appear to be some evidence that RPL options influence the college choice decisions of potential students. Sixty percent of the students choosing the three-year program at the Brockport campus of SUNY would apparently have enrolled elsewhere if the option were not available (Radloff 1977). Fifty percent of a group which established credit by exam at Worcester State College said the option was "a possible factor" in college choice (but 91% indicated it was "not decisive"). The University of Iowa, which administers CLEP exams to entering freshmen in June each year, finds almost all of the test takers enroll in the fall (compared to about

80 percent of the applicants accepted for admission to the freshman class). About 18.1 percent of those receiving RPL credit at Metropolitan State College felt the exams affected their decision to attend MSC.

Although the accumulated evidence is somewhat clearer with respect to the effect of RPL on institution choice, the studies rely on student-reported assessments. These assessments may reflect not so much the use of RPL programs, but the effect of other student (or institutional) attributes on college choice. To overcome this limitation, Wagner (1979) has proposed a study which considers the effects of RPL programs in the context of an enrollment demand model.

II. Time-Shortened Degrees

Do students with RPL credit graduate ahead of schedule? What financial benefits are associated with time-shortened degrees? I consider each in turn.

The evidence on the time-shortening effect of RPL programs is sketchy. Overall, the available data indicate that the majority of students receiving credit through examination do not graduate earlier. First, in very few instances do successful CLEP candidates average more than 8 to 10 hours of awarded credit through examination. For example, the Florida candidates in the university system received on average 16 credit hours, while those in the junior college system received an average of 8 hours of credit (adapted from Furlong 1977). At Arkansas State University, about one-half of the test-takers receiving credit were awarded 9 hours or less (McCluskey and Richmond n.d.). Stallings, et al, report that those successfully taking exams for credit at the University of Illinois do graduate somewhat earlier, but the difference is not very great (1972). Enger and Whitney (1974) provide data which indicate students with CLEP credit graduated earlier than those without examination credit, but subsequent regression analyses seem to suggest most of the difference in acceleration is explained by differences in college grades, the ACT score, and high school rank. Since these variables, and CLEP credit hours, tend to be highly collinear, the statistical results need to be viewed with some skepticism.

Other studies provide evidence of acceleration. Kolstad (1978) found that participation in RPL programs significantly increased the amount of credits earned, even after controlling for other student attributes. In Caldwell's study of University of South Florida CLEP candidates awarded credit on at least 4 out of 5 exams (only 10 percent of those receiving credit), less than half (46 percent) estimated they had saved one year of schooling (1977). However, a second comparison indicated that the students with large amounts of CLEP credit graduated in 3 1/4 years at the same rate as similarly able students without CLEP credit did in 4 1/4 years. Comparable findings emerge from studies of test takers at the University of Florida (Legg and Webb 1976; 1977), California State (1975) and Miami Dade Community College (Losak 1978). These results do suggest that at least those with about a year's worth of RPL credit do tend to graduate a year earlier.

Given these findings, what can be said about the economic consequences of time shortening a degree program? The accumulated research implies the "savings" to students, institutions, and states are substantial, but most of these studies are flawed.

If students had been required to enroll in and to pay tuition and fees for the courses for which they received credit by examination, the nationwide gross "savings" to the students have been estimated to total at least $6 million (adapted from Darnes

1976). Similar calculations suggest tuition "savings" of $444.05 per successful candidate at one public university (McCluskey and Richmond, n.d.) and $85-$100 per successful candidate in one state where CLEP is widely used (Furlong 1977). Unfortunately, these figures are grossly misleading. The estimates require the implicit assumptions that either (a) the student enrolled for fewer total hours and hence realized direct savings, or (b) the student would have enrolled in the exempted courses and completed all the courses in his "after credit" program had RPL credit not been awarded. The evidence suggests that neither assumption is true. First, among full-time students, tuition and fee charges tend to be the same from a twelve credit hour load on up. A student receiving six credit hours through an RPL program could have registered for twelve hours instead of eighteen and incur the same tuition and fee charges. More important, as discussed above, relatively few of the test taking pool graduate ahead of schedule.

Studies of the financial impact of time-shortened degrees on institutional budgets assume that as students receive credit through RPL they will go on to graduate early. As a result, fewer sections of courses need be taught and instructional costs may be reduced. For example, Arkansas State University eliminated 11 sections of English Composition I from 1969-70 to 1975-76, while freshman enrollment increased by 20 percent (McCluskey, n.d.). Over that approximate period, 60 percent of the 2403 ASU students who took the CLEP English exam received at least 3 hours credit. Furlong reports a cancellation of 41 sections of freshman English at Miami-Dade Community College in the fall of 1972, apparently attributable to increased CLEP credit (1977). In his review of the CLEP program at Lehman College, Tittle (1974) estimates that sufficient numbers of CLEP credits were awarded to yield a cost savings of $47,880 to the college (for course sections not taught). Henion (1980) generates similar calculations for North Carolina institutions. Finally, the Carnegie Commission estimated that a straight forward three year baccalaureate degree program could result in 10 to 15 percent fewer undergraduates and a similar reduction in expenditures (1972). Savings in instructional costs from RPL programs, because of their more limited eligibility, would hardly approach the Carnegie total.

Again, these estimates do not accurately capture the effects of RPL programs on the institutional budget. As discussed earlier, the evidence on the time-shortening effects of RPL credit is not persuasive: many who receive credit elect to remain for the entire four-year period. For example, the "savings" from fewer English sections at Utah were apparently offset by the costs of additional sections in literature (Furlong 1977). In Florida widespread reductions of course offerings does not appear to have resulted. Seventy percent of public sector administrators indicated no major course changes (eliminations or advanced offerings) as a result of CLEP (Furlong 1977). Of course, this pattern could change should RPL programs gain in popularity.

Second, even accepting that some students do graduate early, the institutional budget may be tightened because the cost savings at the margin are slight and institutional revenues fall with fewer students enrolled. The Florida public sector administrators are very aware of this potential impact. Furlong reports that 70 percent favor some change in public funding because of potentially reduced revenues.

Studies focused on the financial effects of time-shortened degrees on state funding argue that as successful RPL program participants enroll for fewer credit hours, subsidies to institutions and students may fall. For example, over five years the state of Illinois "saved" an estimated $1 million in subsidies to community colleges. In Florida, the "savings" measured $6 million in 1974-75 alone (Furlong 1977). Estimates for individual institutions suggest substantial "savings" as well (Stallings, et. al. 1972, McCluskey, n.d.).

Again, these estimates tend to mislead because they implicitly assume time-shortened degrees. Since as noted above the successful participants in RPL programs (CLEP) apparently elect to remain on campus for almost the entire term, FTE enrollments and state subsidies would not be greatly affected. Indeed, in a recent survey barely 40 percent of state policymakers anticipated reduced student aid outlays with increased use of time-shortened degree programs (Smart and Evans 1977).

For similar reasons, RPL programs are presumed to reduce the need for new facilities construction. The Carnegie Commission estimated that one-third of the capital costs in the 1970's could have been eliminated with the adoption of a straightforward three-year baccalaureate (1972). In Florida, public sector college administrators seem to concur with the apparent reduced need (Furlong 1977). But, unless students elect to time-shorten their degree programs, no capital cost savings would emerge. Moreover, except in those states experiencing population and/or enrollment growth, the demand for capital expenditures in the near term should be minimal. The more common problem may well be underuse of facilities.

In summary, the evidence regarding time-shortening of degree programs appears to suggest that about 10 percent of RPL participants (the share with a year's worth of credit) do graduate earlier than their peers. Yet, the studies of the economic effects of time-shortening ignore these results, assuming that a credit hour received through an RPL program will translate into one less regular credit hour to be paid for by students, one less credit hour of instruction to be paid for by institutions, and one less credit hour of schooling to be subsidized by states. This is just not true.

Beyond the faulty assumptions about time-shortening responses of RPL participants, the studies providing estimates of financial savings assume (some implicitly) that the reduction in credit hours taught will bring about cost savings equivalent to average cost per credit hour of regular instruction. Among other things, these calculations ignore the sizeable fixed costs incurred by institutions in the short run.[6]

III. Changes in Field of Study and Course Selection Choices

Do students with RPL credit choose different fields of study, more (or fewer) advanced courses, or more (or fewer) courses in the field from which they have received RPL credit? And, how do these choices affect institutional costs and revenues? I examine the research in each area below.

Several institutional studies reveal differences in the distribution of field of study choices between RPL program participants and other students. At the University of Florida, Legg and Webb (1976) found freshmen with CLEP credit were more likely to be enrolled in business or social science curricula and less likely to be pursuing science as a plan of study. Meenihan's investigation of CLEP use among evening students (average age of 31) at the University of Pittsburgh produced slightly different results. Recipients of substantial credit through CLEP (at least 30 credit hours) were about twice as likely to be enrolled in social science and science curricula as their peers without credit earned through RPL. On the other hand, while 21 percent of the non-CLEP group (no RPL credit) chose business as a field of study, only 13 percent of the substantial CLEP-credit group were business majors (Meenihan 1976). While the differences in the findings of these two studies may result from the individual student or institutional attributes not considered in

either (age of RPL participant, size of degree programs by field), neither provide a basis on which one can generalize the effects of RPL programs on the choice of a field of study.

The findings related to the effect of RPL programs on subsequent selection of individual courses appear to be more consistent. Successful credit by exam participants apparently do take more advanced courses. At Utah, for example, increasing use of CLEP attended the reduction in freshmen English sections and an increase in literature sections (Furlong 1977). The very successful CLEP students studied by Caldwell enrolled in advanced courses at the same rate as their similarly able peers (1977). Using an ETS-College Board survey of institutions receiving CLEP scores, Grandy and Shea (1976) report that at over half the institutions, a majority of those receiving CLEP credit took advanced courses in the same area (except for social sciences and history). At Worcester State College, 49 percent of the successful test takers planned to enroll in advanced courses in the same area (52 percent actually did).

What can we conclude about the financial consequences of course selection effects of RPL programs? For students, the effects relate primarily to potential later economic successes. Similarly, unless state funding formulae are tied to FTE enrollment by course level, no immediate financial impact on state subsidies would occur.

For institutions, however, the cost consequences resulting from different field of study and course selection choices may be more significant. If large numbers of students enroll in different courses or different fields in response to RPL options, two levels of reallocation of resources may be required. Both could involve greater costs. First, the increased demand for advanced courses will require more intensive use (smaller class sizes) of more expensive, tenured faculty. Second, if students are induced to enroll in different fields of study because of the alternatives afforded through RPL programs, resources will need to be shifted from areas/departments losing students to area/departments gaining students. Since many of these allocation decisions must be made with an eye toward fixed costs in declining areas, the adjustments may be costly. Moreover, Nelson (1974) has argued that the natural intransigence of faculty to innovation plus an era of stable enrollment and funding mitigates against substantial expansion of RPL programs. In any event, differences among academic areas in the concern about the suitability of and support for RPL options creates a set of incentives to prospective students. As students respond, the need to adjust the allocation of resources, and the cost of these adjustments, may be significant.

To date, no studies of these intra-institutional effects of RPL programs have been completed.

IV. Improved Retention

Are students with RPL credit more likely to persist to degree completion (and at which institutions)? Does improved retention resulting from RPL programs greatly increase institutional revenues?

The evidence from the accumulated research to date suggests students with RPL credit are more likely to persist than their peers. Kreplin's 1971 review of studies indicated broad agreement on lower attrition rates resulting from credit by examination

placement. Subsequent studies, summarized in Furlong (1977), report similar results. In an attempt to compare students with a year of CLEP credit to similarly able, non-CLEP students, Caldwell shows a markedly better retention/graduation rate for the CLEP group (1977). He cautions that the difference may be overstated because he could not track those who transferred. However, Losak (1978) notes higher two year college graduation rates (69 percent vs. 44 percent), higher University enrollment rates (51 percent as compared to 35 percent) and higher university graduation rates (30 percent versus 15 percent) for CLEP credit recipients entering Miami-Dade Community College compared to a group of similarly able students who did not receive CLEP credit. Unlike Caldwell, Losak did track those who left school without a degree.

While these results suggest improved retention overall and within an institution which offers RPL credit, they do not address the related question of whether RPL credit inhibits transfers among institutions. Moughamian (1976) argues (without evidence) that standardized exam credit (eg., CLEP) more easily transfers than regular course credit. On the other hand, Caldwell suggests the greater retention of students with CLEP credit at South Florida implies that fewer do transfer (1977). The question remains unanswered.

Since improved retention of RPL program participants could partly offset enfollment declines associated with time-shortened degrees, the financial effects on institutions may be quite important. Moughamian (1976) observes that state funding, in some cases, is based on mid-term enrollment. Lower attrition among RPL program participants would "protect" the public subsidies in such cases. However, none of the institutional studies have attempted to estimate the magnitude of the tuition and public subsidy revenue attributable to improved retention of recipients of RPL credit.

V. RPL Program Costs

A program of RPL imposes direct costs upon the postsecondary institution. Test development and validation or portfolio assessments can be very expensive. But, even using CLEP, AP, or other standardized tests, the grading, periodic norming and evaluation studies, test administration, and transcript recording expenses are not insignificant costs. Jamison and Wolfe (1976) describe the economic context in which the institutional costs of an RPL program can be evaluated. Their discussion usefully draws attention to the links between alternate procedures (regular instruction, credit by examination, portfolio assessment) and similar outputs. In so doing, they highlight the potential economies resulting from RPL options. Several studies have attempted to make these comparisons.

Stallings, et. al. (1972) estimate the institutional costs of providing credit by examination for the University of Illinois at $63,000 ($7.09 per credit hour) in 1970-71. Significantly, the authors report the instructional cost per credit hour measured more than $15. Therefore, assessment by examination apparently costs less than assessment through regular instruction. At Arkansas State University, where the students pay a fee for taking CLEP, annual costs for the test center total less than $5,000, most of which is reimbursed by ETS (McCluskey n.d.). This cost figure does not include the expenses for faculty validation and norming of the test instrument (accounting for more than half of the annual expenses in the University of Illinois program). Other earlier studies reviewed by Kreplin (1971) also excluded the costs of faculty time in test development and norming.

Sharon (1976) estimates the cost of assessment in experiential programs at $200-$300 per student, but many of these programs, still in development, are likely to be more expensive than academic assessment. A 1974 California State study of experiential programs implied that the increase in student/faculty ratios for assessment programs would bring per credit hour costs in the RPL program down closer to the costs incurred in regular instruction (California State University and Colleges 1975). This latter study, unlike many of the others, implicitly recognizes that marginal costs may differ from average costs in RPL programs. As Windham (1980) suggests, the difference would be an important consideration for the institutions implementing programs. However, no research studies to date have explored this question.

VI. The Need for Further Research

The accumulated research answers only some of the questions about the educational and financial effects of RPL programs. The studies provide considerable evidence to document the size of RPL's time-shortening (of degree programs) and retention effects. However, the studies are especially weak in generating estimates of the induced enrollment, choice of institution and choice of field of study effects of RPL programs. Further, no completed study has adequately measured the financial consequences of the educational choices resulting from RPL programs.

Two recent projects are filling in some of the gaps in research.

In 1979, the College Board initiated a broad study of the economic implications of credit by examination (College Board 1979). The principal outcome of the work of the project's advisory panel is the development of a method to realistically assess the educational and economic consequences of RPL programs for students, institutions, and the public. The method employs a student response model to generate estimates of the numbers of individuals encouraged to enroll, to time-shorten their degree programs, or to select courses in particular departments. The estimated responses of individuals are then used to derive financial costs and benefits. Unlike previous studies, however, the financial components are obtained by examining the institution's own methods for allocating staff and space as well as short run constraints on the allocation process. Further, actual tuition schedules and state funding mechanisms are used to generate student and state benefits and costs. When implemented, this method will provide accurate and realistic estimates of the costs and benefits associated with RPL programs.

A second study, proposed by Wagner (1979), seeks to estimate the extent to which awarded credit by examination affects the enrollment in and duration of baccalaureate programs of study. Wagner plans to use the National Longitudinal Study of the High School Class of 1972 (NLS).[7] The NLS contains questions on the use of RPL programs.[8] When combined with other respondent and institutional data, this project may provide estimates of the effects of RPL programs on induced enrollment and time-shortened degrees across all types of institutions. However, since the data refer to recent high school graduates, the effect of RPL credit on the attendance decisions of adults will not be estimated.

Two other areas, unexplored in any past or current study, deserve attention.

First, does participation in RPL programs affect later career success (employment, salary, etc.)? Measures of these "outcome" effects of RPL are necessary to confront questions about whether the programs are educationally sound. This study would require data collected through at least the early working years from a matched

sample of college students with and without RPL credit. In effect, differences in earnings between those with RPL credit who accelerated their degree programs and those without RPL credit who graduated on schedule would be examined. Similar analyses could be performed for those with RPL credit who revised the content of their academic program rather than graduating early.[9]

A second line of research could probe institutional and faculty responses to RPL programs. Studies of institutional practices continue to show wide variation in the use of RPL programs. A recent survey of admissions officers revealed that differences in the use of the programs will likely continue into the 1980's (Van Dusen 1980). Still, no available research analyzes the influences on the supply of RPL options available to prospective students. Specific questions to be addressed include: Which institution or faculty attributes appear to be associated with the adoption or emphasis of RPL options (e.g., size, sector, urban, selective)? Does the state funding mechanism in the public sector appear to influence the adoption and use of RPL? How easily are credits earned through RPL substituted for regular course credit (e.g., in transferring from other institutions)? An examination of the use of RPL programs in states and at institutions over time, using simple regression techniques, might provide some useful insights into the significance and size of potential influencing variables (e.g., state funding mechanisms, declining enrollments, etc.). Perhaps administrators might wish to offer incentives to reluctant departments (along the lines of those in effect at the University of Pennsylvania).

RPL programs might well increase in importance in the 1980's. For one thing, lower collegiate enrollments will certainly follow the decrease in the size of traditional college-age cohorts. Although this decrease has been anticipated, there is the more alarming, somewhat unexpected drop in enrollment rates from this potential student group. Some economists argue the drop in enrollment rates from 58 percent in 1970 to 48 percent in 1980 for 18 and 19 year old male high school graduates has resulted from an apparent decline in the returns to a college degree, while others refer to rapidly escalating tuition and other out-of-pocket costs of attendance as incomes rise more slowly. RPL programs offer a means to soften the effect of these trends on enrollment rates, if successful participants now enroll because a shorter degree program means considerable cost savings (and a higher rate of return on the investment). Moreover, the RPL option could ease perhaps the more important time constraint among older adults who have not completed college. As the post war baby boom cohorts age, the latter group will represent an increasing reservoir of potential enrollees who may be induced to enroll if they receive credit as "rewards in the coin of the realm" (O'Hearne 1972). Too, expanded RPL programs could lead to lower state subsidies (or at least lower per student subsidies), since state funding of public institutions is enrollment-driven.

Still, these potential effects on institutional and state budgets remain unknown. Without additional research, informed decisions on the appropriateness of RPL as an alternate means of assessing competencies are just not possible.

Table 1

Participants in RPL Programs by
Sex, Race, and SES

(National Longitudinal Study of the High School Class of 1972
2 1/2 Years After High School Graduation)

	Total Population	RPL Programs		
		College Work While in High School	Advanced Placement	Special Exam (CLEP, etc.)
Sex	100.0%	100.0%	100.0%	100.0%
Male	52.5	45.7	49.4	53.7
Female	47.4	54.3	50.6	46.3
Race	100.0%	100.0%	100.0%	100.0%
White	85.6	80.5	86.5	91.2
Black	8.1	11.2	7.2	3.4
Hispanic	2.4	3.5	2.4	2.0
Am. Indian	.5	3.0	2.0	1.6
Other	3.3	1.8	1.9	1.7
SES	100.0%	100.0%	100.0%	100.0%
Low	13.5	7.5	10.0	9.6
Middle	45.2	37.7	32.0	33.8
High	41.2	54.8	58.0	56.7

SOURCE: National Center for Education Statistics
Tabular Summary of Second Follow-Up
Questionnaire Data, 1977.

NOTES

I would like to thank John Valley for providing access to numerous unpublished studies. Of course, any errors of omission or commission are mine alone.

1. The paper draws heavily from recent reviews of available research contained in Valley (1978; 1980). Much of this work relates to one type of RPL program -- credit by examination. Although limiting, to some extent, the conclusions which can be drawn about the effects of other types of RPL programs, the available research on credit by examination accurately reflects the volume of and interest in this particular RPL program.

2. In part, the programs are validated by the satisfactory performance of program participants in their subsequent academic programs (see, e.g., Losak 1978). Readers interested in the results of norming and validity studies for credit by examination programs such as the College Board's CLEP should consult Valley (1980) and Flaherty (1981), and references cited there.

3. Few studies of the effects of RPL programs on subsequent career advancement and salaries are available. Several rely on student perceptions (Losty and Gardiner 1978; Losak 1978; Watsky 1978; and Pringle and Murphy 1980). Beshiri (1978) finds participants in Florida International's External Degree program fare as well as traditional graduates in career advancement. Tully (1977) compared the graduation rates, promotion rates, and salaries of CLEP credit recipients and non-CLEP participants enrolled in a special master's degree program for vocational teachers. While graduation rates and salary increases were comparable for the two groups, CLEP credit recipients were almost twice as likely to be promoted to higher rank than their peers (53.7 percent vs. 28.9 percent). Tully made no attempt to control for other individual attributes (such as aptitude) which could have affected the promotion decision.

4. See State Education Department (1975), Blanchard (1971), and Tully (1976) for a discussion and review of high school-college programs. Nyquist, et. al. (1977) describes three external degree programs in some detail. An interesting discussion of assessment of learning in industry training programs can be found in Duffy (1977).

5. Abraham (1979) discusses potential barriers to participation in credit by examination programs among the disadvantaged.

6. These studies also ignore potentially increased expenses for counseling (see, e.g., Trivett 1975; Stark 1973; Furlong 1977).

7. Surveyed initially in the spring of 1972 (and followed up after 1 1/2, 2 1/2, 4 1/2 and 6 1/2 years), the 20,000 respondents provided detailed information on current plans and aspirations, current activities, academic progress, and family demographic and economic attributes. High school and college characteristics (including information on credit by examination policies) and local labor market data will be merged with the student data.

8. The National Center for Education Statistics recently began a second longitudinal study (High School and Beyond) which surveyed high school seniors and sophomores in 1980. Initial plans for the first follow-up of 1980 seniors, scheduled for 1982, include three detailed questions on the use of RPL programs. Unfortunately, the follow-up appears to be a victim of the new administration's budget cutting.

9. The 1972 NLS data base contains sufficient information on earnings during the early post-college career to test for any harmful (or beneficial) effects of time shortening through RPL program participation. However, since information on the respondent's college course selection was not obtained, the study of the effects of course selection on outcomes would not be possible.

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4. Educational Implications of College Programs Recognizing the Prior Learning of Students

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Abstract

This paper develops a model, in the form of questions and subquestions, that may be used to evaluate the impact on students and student bodies of programs recognizing the prior learning of students and the award of credit and/or advanced standing.

In the early part of the decade of the 1970s, American postsecondary education expended considerable energy in developing programs to shorten the time required by students to obtain a bachelor's degree. Some of these programs focused on alternatives to the traditional nine-month, four-year time-span of student attendance. Others focused on ways to reduce the number of courses students must complete through a variety of programs recognizing learning that students had previously obtained outside the college classroom. Substantially all of these programs had as their primary motivating force the belief that there was less than efficient allocation and utilization of resources (financial, physical, and intellectual), and a desire to accelerate the entry of college educated and trained young people into the worlds of work and advanced learning.

The conditions which existed when most of these programs enjoyed their greatest growth provided very good moral and financial justification for their use: enrollments were climbing, classrooms were full, and placing qualified students out of crowded introductory or elementary courses and into smaller elective courses operated to the benefit of all. The decade of the 1980s, however, is bringing changes to the demographics of students and to the economics of institutions that call into question some of the assumptions undergirding these programs. With fewer 18-year olds graduating from American high school each year over the next fifteen, colleges are reluctant to give up tuition-paying "full-time equivalents" any sooner than they have to.

At the same time new forces countervail in favor of such programs. Increasing numbers of out-of-school adults are returning to (or, for the first time, entering) postsecondary education to upgrade skills, increase earning power, prepare for career change, or simply to learn how to enjoy leisure time more fully. These adults are receptive to programs which provide credit for prior learning or abilities gained from life experiences. The institutions have come to view such programs as important recruiting devices and as a means of providing some financial assistance to this increasingly important part of their future market.

Understanding the impacts of programs to recognize prior learning (RPL), therefore, is becoming a mandatory part of institutional planning. Clearly, the process of evaluating the costs and benefits of alternative methods of assessing and accrediting prior learning involves the measurement of two separate and distinct implications of the activity: the dollars and cents financial costs, and the human and personal educational costs. A separate paper examines the financial aspects of the problem. In this paper, the impact of RPL programs on students is discussed, and a model for examining personal benefits and costs is developed.

Developing answers for the educational questions which comprise the model will require significant data collection. Determining what students actually do with the credit they receive will, in most cases, call for a longitudinal study to determine whether they have enriched their academic programs through taking more sequent courses than otherwise would have been possible, or by

taking courses out of their own area of specialization. Such studies, in addition to the obvious time requirements, call for fairly sophisticated study techniques including matched-pair groups, regression analysis, etc.

It is expected that institutional researchers interested in completely evaluating the costs of alternative programs will deal with these methodological problems. There will remain, however, some potentially serious evaluative questions. While senior administrators at an institution may have little difficulty evaluating a finding that "X" program results in a net loss to the institution of "Y" dollars for every credit given, they may not be so likely to agree on the value of a finding that "X" percent of the students granted credit in "Y" program complete their degree programs in 3.5 years while the remaining "Z" percent of students enrich their programs and actually remain for 4.5 years. Determination of the educational costs will require much more subjective evaluation (and "valuation") of outcomes than is necessary with the financial implication. Evaluating the "social" outcomes of the RPL process will, in short, require that value judgments be made.

The primary question to be addressed is: What are the educational costs and benefits of alternative programs for assessing and accrediting prior learning? A seven member committee composed of economists, educational researchers and directors of collegiate assessment offices met on three separate occasions over the period of a year to discuss, debate and refine the major questions that would have to be addressed to realize an answer to the primary question -- and to develop a series of minor questions under each major question. The primary, major and minor questions which were identified are as follows -- and these questions, taken together, form the analytical model:

PRIMARY EDUCATIONAL QUESTION:

What are the educational costs and benefits of alternative programs for assessing and accrediting prior learning?

MAJOR QUESTION I:

What are the changes in the quality of students enrolled at the institution because of programs recognizing prior learning?

MINOR QUESTIONS:

I.1 What changes occur in the number of higher quality students who are admitted to the institution because of increased numbers of applications generated by programs recognizing prior learning?

I.2 What changes occur in the number of higher quality students who, once admitted, actually enroll at the institution because of programs recognizing prior learning?

I.3 What other changes occur in the quality of students at the institution because of programs recognizing prior learning?

MAJOR QUESTIONS II:

What are the changes in the quality of the educational experience the student receives at the institution that are attributable to programs recognizing prior learning?

MINOR QUESTIONS:

II.1 What changes in the student's choice of major field of study occur because of programs recognizing prior learning?

II.2 What changes in the number of credits earned by students occur because of programs recognizing prior learning?

II.2.A the total number of credits earned during undergraduate study?

II.2.B the total number of credits earned in the upper division?

II.2.C the total number of credits earned in the major field of study?

II.3 What changes occur in the "breadth" of the student's academic program because of programs recognizing prior learning?

II.4 What changes occur in the composition of enrollments in different types and levels of courses because of programs recognizing prior learning?

II.5 What changes occur in the match between faculty competencies and their teaching responsibilities because of programs recognizing prior learning?

II.6 What other changes occur in the quality of student's educational experiences because of programs recognizing prior learning?

MAJOR QUESTION III:

What are the changes in student academic performance attributable to programs recognizing prior learning?

MINOR QUESTIONS:

III.1 What effect do programs recognizing prior learning cause in student's overall academic performance?

III.1.A as measured by grade-point average or rank-in-class?

III.1.B as measured by performance on external measures such as the Graduate Record Examination?

III.2 What effects do programs recognizing prior learning cause in student performance in sequent courses?

III.3 What effects do programs recognizing prior learning cause in student persistence to program completion?

III.4 What other effects do programs recognizing prior learning cause in student academic performance?

MAJOR QUESTION IV:

What are the changes in student post-graduate activity and behavior attributable to programs recognizing prior learning?

MINOR QUESTIONS:

IV.1 What changes occur in the number and kinds of postgraduate options considered by students because of programs recognizing prior learning?

IV.2 What changes occur in the number and kinds of students who are admitted to graduate and professional schools because of programs recognizing prior learning?

IV.3 What changes occur in the first employment experience of students because of programs recognizing prior learning?

IV.4 What other changes occur in postgraduate activity and behavior because of programs recognizing prior learning?

In viewing these questions, two distinctions must be made: one is the type of student being considered and the other is the category of college or university under consideration. The two student groups requiring different consideration are the traditional-aged student enrolling on a full-time basis and the older or adult student studying on a part-time basis. The institutional distinctions are between two-year and four-year colleges, and selective and open-admission institutions. Some elaboration on these distinctions is helpful as administrators or faculty seek to use the model.

The student differentiation is most obvious: older students attend college for more practical and specific purposes than their younger counterparts. The social, fraternal, and athletic goals of the traditional-aged student are not part of the adult student's concern; certification, occupational improvement or rounding-out a liberal education are the most frequently stated concerns of older students. Additionally, the preponderance of adult students attend college on a part-time basis, and view their degree attainment in terms approaching a decade rather than in years. Accordingly, RPL serves primarily as a method of time-shortening towards a degree. The questions in the student model relating to taking the requisite number of years to complete a degree despite receiving advanced standing, or taking courses outside of one's major, or the effect of RPL on academic performance -- all relate primarily to the traditional-aged full-time student. It is possible therefore, to view valid RPL programs as a nearly total good for adult students: it facilitates their entry into higher education and their degree completion, but detracts minimally from their educational goals and attainment.

The effect of institutional type in using the student model is also important. Two-year institutions will witness the least impact on students of RPL programs: the degree and certification goals of two-year college students are generally quite specific, and the receipt of credit or advanced standing will not normally effect any change. Additionally, the time for experimenting with different courses is limited by the 60-credit degree requirement. The one area of interest in two-year college impact of RPL would be on the transfer (4-year college going rate) and employment rate of RPL vs. non-RPL students.

Open-admissions institutions face problems different from selective institutions. The selective, more prestigious colleges devote a considerable amount of time to degree content and the meaning of general education; we have only to recall the intense faculty discussion of degree requirements at Harvard to realize this fact. Therefore, RPL student choice in taking less courses in a major field or completing a "four-year" program in two-and-a-half or three years is of great concern. Something of value is "lost" when a student is on-campus for less than the four-year period. Open-admission institutions, on the other hand, generally possess a more flexible and occupationally oriented curriculum. They will not be as much concerned with student shifts within the curriculum as with student outcomes at the time of degree completion; jobs obtained and/or graduate schools attended may prove of greater importance than sequent courses taken or time for degree completion.

The purpose of the discussion above is to indicate that the model need not be, in most cases, applied in its totality. Institutions should select carefully those RLP student concerns which interest them most, and develop the data collection and analysis techniques only for those questions of highest value. The model is offered as a full smorgasbord, and colleges should take only that amount which satisfies their appetite.

I should like to close this paper with a brief comment on the questions which constitute the model and the data collection processes. The model calls for measuring the "quality" of students admitted under RPL programs and tracking their educational progress through college. As noted in an accompanying paper recommending a research agenda for RPL programs, there is "little information" on the effect of RPL programs. I would suggest that the paucity of data collection and research in this area is related to the sensitivity involved in specifying and measuring "quality" in students. It involves the utilization of high school grades, test scores, and other measures of quality that smack of elitism. Further, it would be very difficult to obtain from a faculty senate, or other academic body concerned with admission, objective measures of qualities sought in undergraduate students, particularly at the top range of abilities. If colleges, in most instances, are unable to specify objectively the type of student they are seeking, then it becomes even more difficult to define the student body composition anticipated from RPL programs. An additional level of complexity is establishing "cut-scores" or levels of performance on RPL programs. It is not surprising, therefore, that little research in, or management of, RPL programs has occurred, Thus may it be always.

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5. THE ECONOMICS OF RECOGNIZING PRIOR LEARNING

by

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Abstract

The award of university credits and advanced placement for prior learning experiences obviously involves potential benefits and costs for students, educational institutions and the public. This paper examines the nature of these effects and their probable incidence. The implications for institutional and public policy are surveyed.

THE ECONOMICS OF RECOGNIZING PRIOR LEARNING *

Douglas M. Windham

The interests of academic scholars and of educational administrators in the various systems which have evolved in the last two decades to allow for the evaluation of prior learning experiences of college and university students has recently changed from a matter of polite interest to one of sharp concern. The matters of concern can be divided into issues representing what I would describe as intellectually "high" and "low" roads. The "high" road considerations relate to the questioning of the ability of any examination or other evaluative instrument to substitute for the learning experiences of the classroom; to the danger of such degrees--totally or predominantly granted by examination or exemption--devaluing the meaning of the baccalaureate and/or allowing for potentially fraudulent actions against students or future employers; to the potential abuse of such systems if they are used as a competitive device among institutions to attract students; and to the controversy concerning the equity of a system which, while not explicitly biased by social class, does tend to be perceived by many as a program predominantly for the economically advantaged.

The "low road" considerations are those having to do with the financial self interests of academics and administrators. I would not imply that these concerns are not legitimate matters for educators to ponder; the "low" connotation refers only to the fact that it is not the educational effect on students which receives primary emphasis here but the institution's or the academic's self-interest. With or without the pejorative connotation, the divergence in these motivations of participants in the present reexamination of prior learning credits must be recognized. This is especially important in that a significant portion of the

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*The first section of the paper is adapted from the author's "The Economics of Credit Exemption," in Credit by Examination Comes of Age (New York: College Entrance Examination Board, 1981), pp. 95-105.

current interest, expressed by educators in terms of objective educational issues, may have their source in primarily self-interested financial considerations. The concomitance of the recent higher education recession and the sudden widespread questioning of a program which heretofore was accepted by most participants (if not actually strongly endorsed) is the basis for my cynicism.

Before proceeding, it would be useful here to distinguish among the major forms of recognizing prior learning (RPL). Long before national systems of evaluation were instituted many colleges and universities already had established programs allowing exemption--with or without credit toward distributional requirements or graduation. In the early 1950's the College Entrance Examination Board, with the assistance of the Carnegie Foundation, created the Advanced Placement Program (APP) which allowed students in high school to take courses which would, following successful completion of examination requirements, eventually count toward college graduation. More recently, the College Level Examination Program (CLEP) has been created to allow for a more general evaluation of prior learning experiences as a basis for granting post-secondary educational credits. The CLEP programs have expanded rapidly and in recent years involved over 100,000 candidates who registered for approximately 250,000 examinations.*

These figures indicate that the concern that these programs may reduce the effective demand for higher education is not poorly founded. Before proceeding to a discussion of the possible effects of the widespread adoption of APP and CLEP, one additional system of RPL should be mentioned. This is the early admission device whereby an institution of higher education allows a student to enter as a freshman after completing the eleventh grade. The student then pursues a normal college program. Early admission is a potentially important alternative to other forms of credit exemption because, in contrast to the APP and CLEP programs, the college or university suffers no loss of revenue or demand for

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*In comparison, the APP program in 1977 involved 82,700 students and slightly over 105,000 examinations (with 1672 colleges participating in the program). No national data is available on individual institutional programs.

its instructional or related services. The fact that early admission programs allow the recognition of prior learning experiences while shifting costs to the secondary schools (which lose full-time equivalents because of fewer twelfth grade students) has already made them controversial. If expanded to offset the potential effects of APP and CLEP activities, a serious conflict will arise between the interests of secondary school systems and post-secondary school institutions.

At present there is no data base which would allow one to evaluate the amount and incidence of the costs and benefits associated with the APP, CLEP, and early admission programs respectively. Studies by Meyer (1975), Jamison and Wolfe (1976), McCluskey (1976), and Kimmel (1976) have raised issues and posited models for such an analysis. The recent work commissioned by the College Board (John R. Valley, editor, 1978) has advanced this effort by presenting alternative research designs for the evaluation of the financial impact of prior learning recognition.

In this paper, I will attempt to present a synthesis of selected parts of this literature while incorporating my own perception of the appropriate emphasis that should be given to the various parts. The concern here will be the effects of the programs; no attempt will be made to evaluate the legitimacy of RPL activities as a basis for placement or credit and no attempt will be made to evaluate the procedures or instruments used in such programs. This does not imply a failure to recognize the importance or even primacy of such issues; it is only a recognition that this paper is only one of a set of papers dealing with the controversy over credit by examination and related devices and that colleagues whose training is more suitable for the evaluation of these other questions are already at work.

In evaluating a prior learning recognition program one ideally would differentiate the level and incidence of costs and benefits among students, institutions, and society. It would also be appropriate to show whether certain subgroups of students and/or institutions receive an unusual portion of the benefits or bear an unusual portion of the costs. Societal concerns deal mainly with the effect of credit-exemption programs on tax support for higher education and income or class redistributional and user/non-user inequalities.

Any program evaluation of RPL must begin with answers to the following questions:

(1) Who is eligible for RPL and who successfully takes advantage of it?

(2) In what manner is RPL granted?

(3) Is RPL used for exempting course requirements and distributional credit but not for graduation?

(4) Is RPL used for reducing the total course load for graduation and, if so, does this reduction affect tuition payments by the student?

The answer to the first question is necessary if we are to examine the assertion (O'Hearne, 1972) that the credit exemption program has a primary effect as a cost-reducing "scholarship" for academically able students. Given the correlation in our societies between incomes, ethnicity, or race and certain academic disadvantages, this effect could be seen as a source of controversy. For example, if high income or white students are shown to receive a disproportionate share of RPL credits (through whichever program), the effect could be to inflate the rate of return to higher education for that group (to the extent exemptions reduced time and instructional fees). Defenders of RPL are then faced with the uneasy task of weighing the individual gains of some students against the offsetting costs in terms of the achievement of societal goals for greater income, ethnic and racial equality in higher educational access.*

The second question is necessary because different institutions provide credit exemption in different forms. If credit exemption is used only to allow the student to bypass certain introductory courses but does not affect distributional or graduation requirements, the effect on total institutional

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*The solution of such a conflict is, of course, not necessarily to restrict credit exemption. As in most higher educational problems of equality, the source and the solution lie in the earlier educational system and the home.

demand as well as the demand for individual department instructional personnel will be minor. In contrast, if RPL affects distributional requirements there is a potential for a redirection of demand for instruction from those departments whose courses are exempted to others. This is in addition to the obvious effect of RPL in reducing the demand for faculty who offer introductory courses. The latter has a potentially serious effect on the demand for teaching assistants and thereby on the ease with which graduate students can finance their education.

Finally, if RPL credit is allowed toward graduation requirements there is the potential for a decrease in the demand for course offerings in general. If the students are able to reduce the total number of quarters or semesters for which they have to be registered, they will reduce tuition payments and the CLEP (or CLEP-type and APP) programs will reduce institutional revenues. Concomitantly, there will be a potential for an aggregate decline in the demand for instructional and support services.

This analysis is only a partial evaluation of potential results. The prediction of possible effects will be complicated by a variety of factors. For example, students who receive RPL credit toward graduation may enroll in the same number of college terms and take fewer courses in certain quarters or semesters.* Some students may use RPL credit to expand their programs and voluntarily take other courses than would have been possible without the exemption program. In both cases tuition payments would be the same as without RPL but the former case would involve a reduction in the demand for instructional services.

The situation is further complicated when one considers the case of part-time students, a rapidly increasing proportion

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*The tuition effect depends on the structure of tuition charges. Most institutions in the United States charge full tuition for some minimum number of undergraduate course hours (for example, twelve course hours per quarter or semester). Full-time students often take fifteen or even eighteen hours in a term without increasing the required tuition. Because of this tuition structure, a student may reduce the hours taken because of credit exemption and not affect the tuition paid to the institution.

of the higher education market. For such students, tuition is usually more closely linked to the actual number of courses taken in a particular term. Because of this, and the unlikelihood of part-time students being willing to take more courses than are required for graduation, RPL programs are likely to reduce tuition receipts and the demand for instructional and support services for this clientele.

As in the analysis of most demand situations, there is the possibility that any reduction in demand as a result of an RPL program may be offset by an increase in demand for institutional services caused by new students being attracted to higher education (or to a particular institution) because of the availability of credit exemption. There is reason to doubt whether RPL programs will increase the aggregate demand for education significantly enough to offset the probable tuition losses. However, the paucity of data and research in this area means that there is little actually known about the scale or incidence of these second order effects.

While the foregoing has emphasized the uncertain institutional impact of the process of RPL the effect on students is more apparent. With only one important exception, RPL programs would appear to be to the benefit of students. The students may reduce tuition payments and/or save time; they may reduce required redundancies in their academic programs and/or enroll in more enrichment courses; and they may at the very least be able to structure their academic programs to suit better their own perception of their abilities and needs.

One possible exception to this sanguine expectation is that credit exemption may dilute the quality of education received. If learning rather than graduating is the primary determinant for life success, and if credit exemption does reduce learning by foregoing classroom experiences, then credit exemption could be a potential cost to students. However, this matter remains open to sharp questioning and, where credit exemption leads to enriched rather than shortened college careers, is possibly irrelevant.

DATA NEEDS

The purpose of this section of the paper is to discuss which forms of financial data appear necessary to the economic

analysis of RPL and how they would be used in a full impact model. The following are the categories of required financial data identified:

(1) state funding formulae;

(2) internal allocation formulae,

(3) financial aid treatment of RPL students;

(4) tuition schedules;

(5) enrollment related student costs and revenues;

(6) direct costs and revenues of the RPL programs.

Before discussing these items individually, it is important to state that it is understood that wide differences may exist in the effects of individual RPL programs on this analysis. What is described here is a comprehensive model; in actual practice certain forms of data may prove to be more expensive to collect than their value to the analysis can justify.

(1) State Funding Formulae -

A crucial matter of concern to publicly assisted institutions will be the treatment of RPL credits in the state assistance formulae. Even if direct revenues from the administration of RPL programs continue to offset costs (see discussion under point #6 below), institutions with substantial RPL credit assignment will face a possible reduction in FTE student registrations. Under most existing models of state aid the effect will be to reduce the amount of state funds received by the institution. Because institutions of higher education are faced with a large proportion of fixed contractural obligations, fiscal hardship may ensue.

It is possible that the governmental authority, if convinced of the academic merit of RPL and of the tax-saving feature of shorter educational careers for state-aided students, might be persuaded to alter the aid system to assist institutions in the transitory adjustment process which will result from a simultaneous increase in RPL provisions and a decrease in the demographic base for higher education. Unfortunately, legislative behavior in the recent past does not support an assumption of

this kind. Institutions may have to be prepared, therefore, to live with the present aid system.

While the fiscal effect of RPL shortened educational careers may be negative for the institution in terms of state aid, a possible offset exists where: (a) RPL leads to substitution of upper level or lower level courses, and (b) the state formula provides greater state assistance per FTE at the upper level. Through a combined use of the outcomes of the student response model* and of the terms of state assistance, it is relatively easy to calculate the expected fiscal result of specific RPL programs.

(2) Internal Budget Allocation Schemes -

Even in those cases where RPL programs do not effect the total demand for courses there will usually be a shift from introductory to upper level courses and from those departments which offer the basic studies requirement (e.g., history and English) to other departments. Just as in the case of state aid, the effect of intra-institutional formulae for allocating faculty, staff, and related expenditures must be analyzed. Again, this requires combining the results of the student response model to the regulations for internal fund allocations.

It should be obvious that the financial effects here are especially sensitive to the nature of credit extension under RPL. If credit exemption carries with it a requirement to take another course in the same department then inter-departmental effects will result only if upper-level courses receive greater credit in the allocation formula (RPL granting departments would have the same number of students but more funds). Even if no inter-departmental effects occur, intra-departmental relations may change. The greater importance of upper-level courses will increase the demand for senior versus junior faculty and for faculty versus graduate teaching assistants. The latter result would have implications for graduate financial aid programs, of course.

(3) Financial Aid Treatment of RPL Students

If RPL programs result in fewer terms of attendance, then students will have lower tuition and living costs and should therefore demand less national, state, local, and institutional financial aid. If full-time and part-time students continue to receive current treatment under existing financial aid schemes, the institution's main effect should be a decrease over time in the demand for its own discretionary aid resources.

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*Discussed in the Wagner and Arbeiter papers.

If RPL programs do not affect length of attendance or if the demand-inducing effect of RPL offsets the shorter terms of attendance, then the net effect on financial aid activity will be less meaningful. If the demand effects are highly responsive to RPL the institution could find even heavier burdens placed on its discretionary aid sources.

Of the various probabilities, the most likely is for RPL to have a neutral to slightly beneficial effect on the financial aid operations of institutions. This is a question that will be resolved by research on student responses to RPL and institutional treatment of RPL students in competitions for financial aid.

(4) Tuition Schedules -

The system of setting tuition and related fees can have an important impact upon the financial results of RPL programs. The important considerations are: (a) whether the institution charges the same tuition to all undergraduates or varies tuition by department and/or level of study and (b) whether tuition schedules are per hour of credit or scaled upward to a maximum with students allowed zero marginal costs for credit hours beyond the tuition maximum. If the same tuition is charged to all undergraduates, then no revenue effects will be generated by the RPL program unless students shorten their educational careers. Where differential tuition is charged for certain more expensive courses of study, the effect of RPL is neutral or revenue-generating depending upon the flow of students from low tuition to high tuition courses because of RPL. If students pay higher tuition for upper level courses, then the RPL effect, for reasons noted earlier, will generate greater tuition revenue as proportionately more students enroll in upper level courses.

With the increasing discussion of differential tuition schedules within institutions, the effects noted here are important for planning purposes even though most institutions do not use such fee systems at present. It should be noted that in the present financial aid environment increased tuition levels will have a positive effect on the amount of external financial aid received by an institution. The other economic and demographic realities of the current market for students have discouraged the use of the tuition/financial aid lever but it must be considered in any analysis of potential impacts of RPL schemes.

(5) Enrollment Related Student Costs and Revenues -

In the short run, institutions have large fixed commitments to a certain type and number of faculty, student housing, classroom facilities, recreational areas, etc., which

cannot be altered to match enrollment changes or distributional variations that may result from RPL programs. If RPL programs are shown by the student response research to have these effects, the institution will face either an increase in per student fixed cost or problems of simultaneous excess capacity in some programs and facilities and shortage in others.

The latter effect will differ from higher education's normal slow response to changes in student demand in that the problems will arise more rapidly under introduction or expansion of an RPL program. The present financial environment for these institutions is such that administrators will be placed in especially difficult circumstances if the enrollment effects of RPL are substantial and negative.

(6) Direct Costs and Revenues of the RPL Program

The last area of financial information concerns the net operating cost to the institution for RPL itself. While various individuals have asserted that RPL programs are self-financing, no detailed full-cost accounting information has been presented to assure this. It may be that present RPL programs cover marginal but not average cost of operation and, if so, this is an important consideration for institutional planners.

Part of the "efficiency" in the present operation of RPL may be related to national test systems and fee sharing between the test service and institutions. If truth-in-testing legislation or internal pressure for faculty administered exams should change this arrangement, would RPL remain a fiscally neutral program for institutions? If not, could the increased costs of the tests be shifted to the students or would it have to be absorbed by the institution? One of the most useful outcomes from this research would be a measure of the relative cost-effectiveness of different RPL programs when used for different student groups.

The data needs discussed here are required for analysis of RPL in those cases where the student response model indicates that enrollment changes occur in aggregate or in a distributional sense. If university policy and/or student behavioral patterns are such that the students are seen to change neither the amount of credit taken nor course-level and type then financial impact fails to be a critical issue.

Any group undertaking a study of RPL financial impacts should be able to design a check list of institutional policies which would detect whether RPL analysis is even necessary. Then, the student response model will determine the significance of further analysis of the financial variables.

SUMMARY OF PROBABLE EFFECTS

Table One presents a summary of the possible effects of the different forms of RPL upon institutions and students. The symbols used are as follows: a plus (+) represents a probable benefit; a questionable plus (+?) represents a likely but uncertain benefit; a minus (-) represents a probable loss; a questionable minus (-?) represents a likely but uncertain loss; a zero (0) indicates no benefit or loss is expected; and an asterisk (*) indicates internal redistribution among levels and departments.

Seven alternative higher education programs for granting credit for earlier achievement are listed in the first column of Table One: three forms of the AP program, three forms of CLEP-type credit by examination programs, and the early admission program. As column two indicates, secondary schools are largely unaffected in terms of costs or benefits (when these effects are restricted to the impact on the "full-time Equivalency" funding base used in most states) except in the case of colleges and universities allowing eleventh grade graduates to enroll as first-year higher education students. The present small scale of early admission programs should not lead one to discount too highly the potential impact if higher eudcation institutions should expand early admission as a means of alleviating some of the potential "costs" of APP-CLEP programs. The AP program may have a higher unit cost for secondary schools then does the traditional curriculum but there is no evidence that this margin is substantial. The existence of APP and CLEP programs may increase retention of students and their levels of motivation and these should be recognized as possible positive effects for secondary schools. Early admission possibilities could increase motivation but would not have a strong enough effect on high school retention rates to offset the negative effect of students lost for their full senior year.

For higher educational institutions, Table One indicates why such substantial concern exists about the APP and CLEP programs. While the use of RPL tests for placement or to alter distributional requirements may cause internal reallocation of demand for instructional services, the serious fiscal threat is in the reduction of the number of tuition-bearing courses required for graduation. As explained earlier, to the extent that this reduces tuition receipts, it is the university or college which is financing the shortening of the student's program. The incentive for these institutions to emphasize increased use of early admission is obvious; in this latter case the costs are shifted to the secondary school system.

The effect on students has been divided in Table One into three parts: the effect of RPL on the time required for graduation, on direct costs of education, and on the quality of education received. The patterns in this part of Table One indicate a strongly

TABLE ONE

THE INCIDENCE OF EFFECTS OF RPL PROGRAMS

CREDIT EXEMPTION PROGRAM	INCIDENCE OF EFFECTS				
	On Secondary Schools (FTE's/Demand for Instructional Services)	on HIGHER EDUCATION INSTITUTIONS		on INDIVIDUAL STUDENTS		
		Tuition Receipts	Demand for Instructional Services	Time Savings	Direct Cost Savings	Quality of Education
ADVANCED PLACEMENT PROGRAM (APP)						
I. Placement Only	0	0	*	0	0	+?
II. For Distributional Exemption Only	0	0	*	0	0	+?
III. For Credit toward Graduation	0	-?	-?	+	+?	+?
COLLEGE-LEVEL EXAMINATION PROGRAM (CLEP)						
I. Placement Only	0	0	0	0	0	+?
II. For Distributional Exemption Only	0	0	*	0	0	+?
III. For Credit toward Graduation	0	-?	-?	+	+?	+?
EARLY ADMISSION PROGRAMS	-	0	0	+	+?	+?

positive effect of RPL in all three dimensions of student impacts. Time is either reduced or unaffected; costs are either reduced or unaffected; and the quality dimension appears positive. The uncertainty about quality stems from questions concerning the ability of the testing programs of APP , CLEP, or of individual institutions) to assure that successful students are prepared for the higher level courses for which they become eligible. Presently, it seems fair to say that early admission programs, because of their greater selectivity, have less potential for such problems. And yet even in that case, studies have indicated that academic success has not always been concomitant to an easy adjustment to the other dimensions of college life.

All of the effects which are noted in Table One are only expectations based upon deductive reasoning from assumptions about student and institutional reactions to these various programs. At the present time, no data base exists to allow the incidence of positive or negative effects on schools, colleges, and students to be calculated. The extensive use of modifying adjectives such as possible, probably, and potential in this paper is not an attempt to avoid being decisive but simply a recognition of reality. Before public and institutional debate on these programs can advance, it is necessary to develop a model which will allow both the individual institution and the social science researcher to estimate with confidence both the direction and scale of the effects of credit exemption programs.

The College Board is presently engaged in a research program to examine two aspects of the RPL program. The first proposed study would involve a stratified random sample of students who have used the APP or CLEP programs with stratification based upon the number of examinations attempted. Five areas of information will be elicited: test results, personal characteristics, high school experience, financial situation, and future plans. The desired outcome of this project is a better understanding of whether credit exemption programs lead to shorter time investments in college and of the amount of financial savings (if any) which result from the credit exemption programs.

The second credit exemption study would emphasize institutional concerns. A sample of institutions would be invited to cooperate in an assessment of the financial impact of RPL activities. The effect on FTE levels and the relative size of course demand by departments, divisions, and basic versus upper levels would be analyzed. The primary purpose of this research work will be to produce a management model which can be used to evaluate the levels and incidence of costs and benefits related to the institutional recognition of prior student learning (with an emphasis on APP and CLEP). The model should allow for the evaluation of the demand for faculty and the effects of credit recognition on the fixed, variable, and marginal costs of instructional services. The effects of RPL programs on student as well as institutional finances will be considered as part of a

general reexamination of the rationale for state, institutional, and personal financing of RPL programs.

The greatest danger revealed by this paper's introduction to the economic issues in this debate is that financially we may face a "zero-sum" game. The benefits to the student of RPL may be purchased only at a financial loss to the educational institutions involved. In another "zero-sum" situation, higher education institutions may be tempted to expand early admission programs beyond justifiable limits simply to avoid the tuition losses of other RPL forms. Finally, certain marginal institutions may become involved in the use of credit exemption as a competitive device against other more responsible institutions. As in Gresham's law of monetary value-- bad money drives out good-- so in an employment system increasingly dominated by credentialism, "bad credits" may drive out the "good."

All of these issues point out the crucial responsibility borne by the participants in the RPL debate. The "economics" of the matter is overwhelmingly important but the answers will not come from economists alone or even primarily. Credit exemption questions are subordinate to the resolution of the more basic issues of the purpose of the post-secondary educational experience. Our difficulty in resolving our present quandary is a product of the inability to define that purpose.

THE ECONOMICS OF CREDIT EXEMPTION

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1 Study group papers

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Study Group 4
"Integrating Learning and
Experience: from Policy to
Practice"

6. THE VALUE OF RELEVANT WORK EXPERIENCE IN EDUCATION OF PRIMARY SCHOOL TEACHERS

by

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Abstract

This paper is concerned with the nature and value of "relevant" work experience in class teacher education. Additional credits can be received in the first selection phase of students on the basis of experience in teaching and/or in working with children and teenagers. Twenty six per cents of the women and 37 % of the men who started and finished their studies in class teacher training at Joensuu University had worked at least for one term as class teachers before their studies. 40 % of women and 10 % of men received additional credits on the basis of working with children or teenagers. Connections of work experience with other selection variables, personality traits, vocational and study orientation, certainty of vocational choice, interest in studies and success in them are analyzed as part of a more comprehensive research programme.

Those with teacher experience had failed earlier in getting a place in higher education, had a negative self-concept, were less interested in studies and displayed a more pragmatic and instrumental attitude to studies than students generally. Relevant work experience had also negative connections with some criteria of study success. Relevant work experience was not connected with more interest in education and teaching or with better-founded vocational choice than on the average. As a conclusion, the value of relevant work experience seems to be problematic in relation to class teachers' studies and vocational orientation. The motives of acquiring relevant work experience - whether vocationally well-founded or not - seem to be more relevant factors than content or amount of work experience as such.

Introduction

Investigations of student learning have shown that different types of student motivation lead to different kinds of processing the material to be learned and to different qualities in learning outcomes. Learning that is based on extrinsic motivation is typically connected with passive and surface approach in learning and with incomplete and surface level learning outcomes (Entwistle et al. 1979, 365-380). In the recent Finnish discussion it is generally accepted that university graduates ought to have a deep responsibility to their profession in order to be able to develop their professions and become involved in their vocational tasks in a personal manner. It can be assumed that motivational factors have special emphasis in the profession of class teachers and also in teacher training. Koskenniemi (1965, 515) and Louhimo (1969, 74) have demonstrated that ill-founded or unsuccessful vocational choice has negative effects on the teacher's work. When analyzing the meaning of "relevant" pre-training work experience in relation to the training phase and the later vocational activity, the basic question is whether work experience is connected with sound and well-founded vocational choice or not. In Finland Koskenniemi has supposed that pre-training teacher experience is linked with more realistic vocational choice and means more stable intentions to remain in vocation (1965,340). Abrahamsson et al. have referred to potential benefits of work experience before academic studies. These benefits include more clarity in study and vocational choices and a better motivation for learning (1980, 97).

It has been demonstrated that the application to class teacher training took place in 1976 on a more external and accidental basis than in 1971 (Perho 1981). This is especially due to the diminishing ratio of student places to the amount of potential applicants (Perho 1980). The macro-level negative change in students' choice situation has led to difficulties in foreseeing the probability of finding personally interesting work and in forming an appropriate attitude to work. The result may be diminishing vocational exploration or immature vocational closure (Jordaan 1974, 272-273). It can be assumed that in the worsened situation of vocational choice the basis of acquiring work experience that will help in getting a place in higher education may also be connected with ill-founded vocational orientation.

In this paper the nature and meaning of relevant work experience will be analyzed empirically on the basis of the results of the follow-up study of class teacher trainees at Joensuu University 1976-1979. This investigation is part of a larger study on the students at Joensuu University and continues the tradition of Educational Career Study which was initiated in 1965 at Helsinki University by Häyrynen (Häyrynen 1970).

Some Finnish results of relevant pre-training work experience on teacher training and on in-service practice

Teacher experience has correlated positively with success in the teaching episode which is the most important part of the entrance examination of teacher education colleges (Komulainen 1977, Komulainen and Hytönen, 1978). It has not usually correlated with the mark in teaching skills (Jussila, 1976, Komulainen and Hytönen, 1978). The situation has been explained by the superficial and impersonal nature of demonstration lessons.

There are few results on the significance of pre-training teacher experience on the in-service work of teachers or on the certainty of vocational choice. In the follow-up study of Koskenniemi the pre-training teacher experience correlated positively with the intention to remain in the teacher profession during the first in-service years (1965, 340). In the investigation of Määttä concerning teacher training applicants the teacher experience correlated negatively with the amount of orientation to the teacher's profession as one's calling or predilection (1978, 36).

Main features of the admission procedure to class teacher training

The selection to class teacher education occurs in two phases. The first selection takes place on the basis of the marks in the senior secondary school (gymnasium) and the national matriculation examination, which is in practice a formal admission requirement to studies. Additional credits can be received in the first selection phase on the basis of relevant work experience, which can either be experience in teaching or in working with children or teenagers. In 1976 30 % of the female and 53 % of the male students that started their studies in a teacher training college of Joensuu University had got at least some teacher experience before the studies. Twenty-six per cents of the female students and thirty-seven per cents of the male students had at least half-a-year experience in teaching. Forty per cents of the females and ten per cents of the males had got at least some credits on the basis of 'other relevant work experience'. The number of men with other relevant work experience is too small to be included in further analyses.

In 1976 there were totally 1114 applicants to class teacher training at Joensuu University. 290 of them were invited to the second selection phase. The main part of it at Joensuu University is a task of organizing some written material and presenting it orally to the admission board. The credits of the first selection phase influence no more on the selection in the second phase.

The follow-up study of class teacher trainees at the University of Joensuu 1976-1979

The general aim of this investigation has been to analyze the nature and significance of the vocational and study orientation to academic achievements, success in career choice and certainty of the choice. In this paper I present results of the connections between relevant work experience and other variables of admission procedure, personality traits, vocational and study orientation, certainty of vocational choice in different phases of studies, interest in studies and success in them. Finally, the relevant work experience is related to the personal and hierarchic vocational orientation pattern of students.

The population of the study consists of the students that began their class teacher studies in 1976 and finished them in 1979 (N= 74; 44 females and 30 males). Three enquiries were made; before the studies (in connection with the entrance examination), in the middle of the studies (1977/1978) and at the end of them (1979). All that started studying took part in the enquiry before the studies, 53 (72 %) in the middle of them and 56 (76 %) at the end of the studies. Twenty-three females (52 %) and 22 males (73 %) filled also the self-concept inventory constructed by Häyrynen at the beginning of their studies. The results of the inventory are presented only in the male sample because of the relatively small number of subjects in the female sample. In addition to the enquiries and the self-concept inventory, 22 students were interviewed at the end of the studies.

Vocational orientation was measured before the studies by asking the reasons for the choice of class teacher training and vocation ("career choice motives", 17 five-point items), properties of one's "ideal profession" (10 five-point items) and vocational interests (36 five-point items, from which were also formed six scales that were used as indicators of Holland's six orientation types). The properties of ideal profession and vocational interests were asked in the same way also in the middle of the studies. The personal, hierarchic pattern of one's vocational orientation was operationalized on the basis of Holland's (1973) six orientation type variables (indicators of social, artistic, realistic, investigative, enterprising and conventional orientation). The operationalization of the hierarchic orientation pattern was made by using Holland's three parameters of congruence (the correspondence between student's own primary orientation and that of the teaching profession), differentiation (the rate of the hierarchy of the student's orientation pattern) and consistency (the psychological consonance between the student's primary and secondary orientation types). The operationalization of the personal and hierarchic orientation patterns could be validated partly by the depth-interview based on the methodological ideas of Leontjev (1977) and Jadov (1974) concerning the hierarchic nature of personality and motivation.

Certainty of vocational choice was measured before the studies, in the middle of them and at the end of the studies by asking if the profession of the class teacher was one's 'ideal profession' or not and by asking if the same profession was 'the only right one' to oneself .

Study orientation was measured in the middle of the studies by asking if one's orientation was primarily 'vocational', 'non-conformistic', 'academic' or 'collegiate' (method of Entwistle and Wilson 1977, 189).

Interest in studies and their components were measured by personal student ratings at the end of the studies. The rated components were 'general theoretical studies', 'studies of educational sciences', 'basic subject studies', specialized studies in one's preferred subjects (the two types of which are 'practical courses' and 'theoretical courses') and 'student teaching'.

Criteria of academic achievements were marks in the basic subject studies (separately the 'content mastery' and the 'didactic mastery'), marks in the specialized studies (separately in 'practical courses' and 'theoretical courses') and the mark in teaching skills, which is considered as the most important criterion in teacher training.

Research findings

Work experience and the other selection variables

Teacher experience (the amount of additional credits on the basis of teacher experience) correlates negatively with the three variables of the school and matriculation examination achievements (the first selection phase) in the female sample. The highest correlation is between the teacher experience and the average of school marks (-.63). The connections of the teacher experience refer to a very clear compensatory nature of teacher experience in the first selection phase in the female sample. Also 'the other relevant work experience' has negative correlations with school achievements but they are not significant in the sample of the admitted females. The only significant correlation in the male sample was between the work experience and the credits of practical subjects at school (-.60). Work experience has no significant correlations with the variables in the second selection phase in neither sample.

Work experience and the personality traits (only male students)

The male students with teacher experience are more controlled (.52) and more asthenic (.49) than the other males. These correlations may reflect the more negative self-concept of those with teacher experience. This may be due to their problematic career choice history. Those with teacher experience have experienced more failures in trying to get a place in higher education than others. The situation is similar in the group of females, too.

Work experience and vocational orientation before studies

Those with teacher experience have chosen their studies on the basis of the 'advice of their friends' (.41) and are less interested in 'professions that offer opportunities of professional promotion' (-.30) or 'developing one's inclinations'

(-.36) than others in the female sample. These connections may reflect somewhat submissive and dependent attitude, which may be due to the negative results of previous failed applications to higher education. On the other hand, females with teacher experience base their choice more often than others on personally challenging nature of the teaching profession (.30) and have vocationally more stable choice (.31). Also 'the other relevant work experience' correlates negatively with interest in 'professions that offer possibilities of professional promotion' (-.38), with 'enterprising professions' (-.33) and with interest in 'investigating nature and ecosystem' (-.38). Male students with teacher experience put less emphasis on 'the opportunity to lead others' (-.43) in their ideal profession than others.

Work experience and vocational and study orientation in the middle of studies

Teacher experience correlates negatively with interest in 'enterprising professions' (-.32,n.s.) but no more with variables reflecting self-enhancement or self-actualizing tendencies in the female sample. Other relevant work experience is still connected with aversion in 'investigating nature and ecosystem' (-.39). Work experience is not connected with the quality of study orientation in the female group.

Males with teacher experience are less 'people orientated' (-.52), less 'interested in work with possibilities to develop one's social sensitivity' (-.60), less interested in 'enterprising professions' (-.40, n.s.) and in 'planning of schools and instruction' (-.40, n.s.) than others. Teacher experience correlates with pragmatic 'vocational orientation' to studies (.53) and negatively with 'non-conformistic orientation' (-.53). It seems that male students with teacher experience have lost their original interests and their sense of teacher-identity has been disturbed.

Work experience and the career choice certainty in different phases of studies

The only significant correlation between the amount of relevant work experience and criteria of career choice certainty is that of teacher experience with considering the profession of the teacher as 'the only right one' at the end of studies (.43) in the female sample. However, when we dichotomized teacher experience into two categories, one group with at least half-a-year teacher experience and the other with less than that, more connections were found but in the female sample only. Teacher experience correlated then with considering the profession of the class teacher as 'ideal' before studies (.34) and in the middle of studies (.40) the half-a-year teacher experience being a sufficient but not a necessary condition for considering profession of the teacher as ideal. Teacher experience correlated also with considering the profession of the class teacher as 'the right one' in the middle of the studies (.35) and at the end of them (.52). 'Other relevant work experience' correlated, when dichotomized in the corresponding way as teacher experience, with considering profession of the teacher as ideal in the middle of the studies (.34).

Work experience and interest in studies

In the female sample the amount of teacher experience correlated negatively with the 'interest in the studies generally' (-.47), 'studies in education' (-.31, n.s.) and 'theoretical specialized courses' (-.66). The only positive correlation of teacher experience was that with interest in field teaching phase (.24, n.s.). Also, males with teacher experience found university studies generally less interesting than the others (-.42), especially 'broadly based introductory studies' (-.68) and studies in educational sciences (-.42). It seems to be that especially theoretical or academic studies have been experienced as most boring or least relevant in the group of all students with pre-training teacher experience.

Work experience and success in studies

In general teacher experience has small, non-significant negative correlations with criteria of study success. Teacher experience has significant negative correlation with the mark in the 'didactic mastery' of basic subject studies (-.39) in the female sample. This may be due to the fact that this criterion is connected with "school-like" performance. It correlates .48 with the average of school marks which had a clear negative correlation with teacher experience (-.60). Other relevant work experience correlates negatively, in the female sample, with the mark in 'theoretical courses' in the specialized studies (-.39). The correlations between teacher experience and the most important criterion, the mark in teaching skill, are -.10 (females) and -.15 (males). These correlations may be partly explained by the nature of the teaching skill criterion. The criterion has the highest correlation with achievement type motivation, which indicates its impersonal and artificial nature (Perho 1981).

Work experience and the type of personal vocational orientation pattern

The possible combinations of vocational orientation patterns on the basis of Holland's three parameters are presented below.

	Congruent patterns		Incongruent patterns	
	Consistent	Inconsistent	Consistent	Inconsistent
High differentiation	1	2	5	6
Low differentiation	3	4	7	8

On the basis of Holland's theory and the empirical findings of the present study (Perho 1981) cells 1 and 2 in the female sample and cells 1, 2 and 3 in the male sample were defined as cells of well-founded and sound vocational orientation in relation to vocation of the class teacher. E.g., cell 1 includes students, whose interest in education is on a remarkably higher level than their secondary vocational orientation area and whose secondary vocational orientation is psychologically consistent with interest in education (empirically the second orientation in this cell is generally artistic). The essential finding of the

analysis is that those with relevant work experience are almost randomly distributed to cells of well-founded and "ill-founded" vocational choice. The result is similar regardless of the looseness or strictness of the time-interval-criterion used when defining "relevant" work experience. These findings indicate that the more certain career choice of those females with more teacher experience may be misleading and reflect rigid and "forced" but not better-founded vocational orientation than generally. The choice may be "certain" because females with teacher experience do not usually have very good chances of becoming admitted to other fields of higher education because of their poor success at gymnasium and in the matriculation examination.

Conclusions and discussion

The findings of this investigation indicate that "relevant" work experience is not so relevant in relation to the study process in class teacher education and to the vocational orientation of students than is expected and at least hoped for. The experience in working with children or teenagers seems to be rather indifferent in relation to studies and vocational orientation. The teacher experience is connected with negative self-concept and pragmatic and negative attitudes to studies, especially to the theoretical and "academic" components of the curriculum. Relevant work experience has negative connections with criteria of study success, too.

The findings may be partly due to the inability of teacher training to respond to and utilize the more pragmatic orientation of those with pre-training teacher experience and reflect the common problems connected with the professionally orientated programmes where additional credits are received on the basis of work experience. In such contexts the "normal" students will function pedagogically as a steering group in the planning of the programme (Abrahamsson et al.1980, 100-103). It can be foreseen that the problems of those with previous teacher experience will become more serious as class teacher training has recently been prolonged from three to four years and the academic content including a master of arts thesis, has been increased. However, the more basic problem with relevant work experience seems to be that it does not mean, in the present state of affairs, a better-founded or more sound and intrinsic vocational orientation than on the average. This may reflect the rapidly worsened choice situation of students in the seventies.

It is probable that, in circumstances with real degrees of freedom in choice situation, the relevant work experience would be more often linked with sound vocational orientation than at present. In the "free" choice situation work experience generally, without specifying its nature or relevance, might also be relevant at least in relation to vocational orientation and vocational maturity. According to longitudinal studies in the USA (e.g. Super et al.1967) the degree of vocational maturity is related to the breadth and richness of pupils' activities and hobbies, including work activities, whether these activities are related to future tasks or not. Observations like these would, in addition to educational policy points of view, support the idea of obligatory "non-relevant" work experience as a formal requirement to teacher training, which has been presented in the Swedish discussion (see Abrahamsson et al. 1980, 18-19). However, in the restricted choice situations with very limited degrees of freedom, the effects of such an admission procedure would be unpredictable, probably more negative than positive, in relation to students' study and vocational orientation.

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7. TEACHERS INTERPRETATION OF THE CONCEPT "EXPERIENCE"

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Introduction

Research, if it is successful in finding new explanations (viz. causal connections), can change our conception of the world. Thus our idea of illness was altered when scientists discovered that infections were caused by bacterial or viral organisms. The sociologist Johan Asplund points at another effect of research: that it transforms our world view by investigating the meaning of a phenomenon (Asplund, 1971). He writes,

> *When someone tells me about the geographical distribution of F (a social phenomenon) or the cause of F, I can still ask myself: "But what is the meaning of F?".*

One example may be taken from our research group (the INOM group) at the University of Gothenburg. When the members of the group give learning the meaning "qualitative changes of the conception of the world around us", they have brought a new perspective to learning. Traditionally, learning has been described as quantiative changes. By making test subjects learn nonsense syllables, researchers have described changes in retention through time, and have in that way been able to demonstrate regularities e.g. in the form of curves of retention. The INOM-group has demonstrated that this way of describing learning in terms of quantitative changes does not apply the the learning of meaningful material. Indeed, it applies to one case only, i.e. the learning of nonsense syllables. It is pointless to describe retention of, for example, the content of an article in curves of retention. If one is able to remember what the article was about, it is not a matter of repetition, but defends on an understanding of the message and the integration of this message into the person's conception of the world. For this reason it can be concluded that learning of meaningful material can best be described as a change in the conception of a phenomenon and that such a change is qualitative (Marton et al, 1977). This new understanding of "learning" is important because it fucuses on and puts in question a concept that used to be taken for granted.

This investigation concerns the meaning of the concept "experience": In educational contexts, while statements on the importance of experience are frequent,

definitions of the meaning of "experience" are more seldom - it is taken for granted. John Dewey is an exception: in his book - "Experience and education" he clearly demonstrates the importance of explaining what is understood by the concept "experience" (Dewey, 1974). He makes a through analysis of this concept. and gives examples of educational errors that occur when education based on "experience" is applied without a clear understanding of the concept.

Dewey makes a philosophical analysis of the meaning of experience in an educational context. Our work, on the other hand, does not aim at a philosophical analysis, but at an empirically-founded description of different modes of conceptualizing "experience" in an educational context. It is empirical, because it is an attempt to analyse and describe what a number of people have expressed in our interviews. Consequently, we avoid, at least at the explicit level, the normative demand often inherent in a philosophical analysis. The purpose of our analysis is to describe hos some teachers <u>really</u> apprehend certain phenomena or concepts instead of telling how they <u>should</u> be apprehended.

To detail our approach further, a distinction needs to be made between how something <u>is</u> and how something is <u>conceptualized</u>. Marton, who characterizes this is as a difference in the level of description writes:

> *In educational psychology questions are frequently asked for example, about why some children succeed better than others in school. Any answer to this question is a statement about reality. An alternative is a question of the kind asked by Säljö (1978): What do people think about why some children succeed better than others in school. Any answer to this second kind of question is a statement about people's conception of reality. These two ways of formulating questions represent two different perspectives. (Marton, 1978).*

Marton calls the former <u>the first order perspective</u> -dealing with facts which can be observed from outside. The latter is <u>the second order perspective</u> - it is about how something appears to someone; and is an experiential viewpoint. It is not a question of truth or falsehood, it is about <u>what</u> is studied. A somewhat drastic example can be that of a paranoic who finds his fellow men hostile and conspiring to kill him. From the second order perspective this is a true description of his view, even if it is false from the first order perspective. To understand paranoia it is not enough to have a description of the person's behaviour - one must also describe his experience of the world around him.

To sum up, our intention can be characterized in the following way: we wish to describe how the concept "experience" is apprehended by a number of persons.

his implies that we aim at describing meanings instead of giving explanations. It also means that we have chosen to describe hos experience appears to these persons and not a normative argumentation on what this concept ought to mean. In our investigation, the object of interest is the conception of experience from the viewpoint of teachers in adult education of the secondary level. We have underlined this further by describing precisely this conception in the context of the teac-ing process.

The qualitative analysis

The material for the anlaysis consists of interviews with 29 teachers in adult education, who were teaching at least one of the following subjects: mathematics, physics, chemistry, history and social sciences. The interview was a semi-structured one concerning a number of phenomena like learning, knowledge etc. The purpose of the interviews was to get as good an insight as possible into the convictions of the teachers. The interviews were tape-recorded and type-written.

The aim of our analysis was to find the qualitatively different categories and to describe them as carefully as possible. The unit of description is called conception. Marton specifies this term by stating that it often stands for what is taken for granted. but it can also be explicit, and is the basis on which we found our reasoning. The term does not differentiate between scientific ideas and common-sense reasoning. In many instances, scientific ideas and common sense reasoning may be described on the same level - as the same conception of a certain phenomenon. Often scientific ideas become common sense (Marton & Svensson, 1978). A conception is not an attitude, but instead it is the conviction about reality that constitutes the basis or the legitimation of an attitude.

The result of our analysis is a description of the variation in the conception of experience in an educational context. What is the use of such a description? We think that it serves several purposes: It contributed to the knowledge of the school sub-culture; it presents to the teachers a basis for reflexion on the concept studied, a presentation that could liberate them from certain frames of thinking.

Result

It was possible to describe five qualitatively different conceptions of experience (experience as something related to teaching). They are:

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A. Experiences, that can be used in teaching are experiences which one or a few students have made and which can be used as information to the rest of the class.

This conception is focusing on the fact that pupils sometimes are experts on something, for instance an electrician has a practical knowledge of electricity that can be used in physics, or a shop steward has an aquaintance of bargaining to be used in social science.

B. Experiences that can be used in teaching are experiences which most students in the class have made and which can be used to direct the students' attention to the relevant context while a subject is taught.

Here the focus is on the fact that adults are familiar with certain phenomena like taxes. It is this shared, common knowledge, that conception B is pointing at.

C. Job experience can develop practical knowledge which the students may use in the educational context.

D. The student brings an outlook on the world into the classroom that is in conflict with the view of the subject taught.

This is a conception built on the conviction of a conflict between everyday knowledge and school knowledge.

E. Experiences from life give a certain capacity in emphaty that makes it possible for the adult student to understand different perspectives as serious alternatives.

These were the variations in qualitatively different conceptions of experience as apprehended by the teachers.

Discussion

One may ask what significance different conceptions have for the possibility to give experience a role in teaching. It is our assumption that the teacher's conception of experience gives him a frame for his thinking when he plans his teaching. Here we actualize the problem of the proper place of ideas, if one wants to understand teaching. One can ask whether the conceptions are expressions of

physical and administrative frames or if the conceptions have an independent relation to these frames. Our position is that with an unreflected, unthematized attitude one is a prisoner in the frames and the tradition built around them. But a reflective conscious conception contains the possibility of transcending the tradition and, if not break the frames, using the possibilities that actually are available.

It seems to us just as absurd to understand the teaching by reducing it to physical or administrative entities as to reduce it to ideas. The extent to which students' experiences are used depends on the aim of the teaching in relation to above all; the amount of time available, the quantity of subject matter to be taught, and the current conceptions of experience.

I have tried to characterize this interaction with regard to each conception of experience. Sometimes the description can be founded in explicit answers in the interviews. sometimes the implications are inherent in the conception itself.

Teachers embracing conception A bear in mind the unique experience. Most of them expect the experience to be rather qualified, even that the student's experience should be superior to that of the teacher. Generally, one may conclude that these teachers use the students' experiences to a limited extent, a fact that they blame on two circumstances. Some say that they do not know which students have the qualified experiences that are relevant to the course. The other circumstance is, that often in this view, there is an implicit suggestion that students' experiences fall outside the main direction of the course.

The second characteristic of conception A was that the experiences should be used as information. It seems as if using experience has the same function as ordinary lecturing, with the exception that it is the student instead of the teacher who presents it: the knowledge brought to the class is not qualitatively different from what the teachers brings. The rest of the students are in the same position no matter who is speaking. From what is said, it is easy to understand that the teachers allow little room for the students' experiences. As a matter of fact, it does not appear meaningful to use the students' experiences to any great extent.

The teacher embracing conception B seems to use experiences that most students have had as concrete examples and reference points in everyday life for the more abstract content of the course. One notices that it is the teacher who

chooses these examples in the lectures and that the students play a passive role, where it is taken for granted that they have had a similar experiences. In contrast to conception A, conception B represents a view of experience that gives it a status that is qualitatively different from that of information. Here it is a matter of making the student find a personally experienced context that may be related to the teacher's message. Information does not have such a function. In the book "Language. thought and communication", Rommetveit makes an analysis of communication, where he states that the sharing of experiences is the basis for understanding messages (Rommetveit, 1972). Conception B can be looked upon as a concrete way of establishing such a sharing between the students and the teacher. The holders of conception B are using the students' experiences to a somewhat greater extent than those of conception A, but often it is limited to the use of standard examples. A physics teacher makes one exception to this; she describes how she can create a common experience by releasing smoke in the room in order to make the students see the movements of the air. Thus the students are able to discuss explanations of these movements.

The two conceptions above are based on the premise that experience can be described as facts - directly experienced and as such true. Conception E represents another view of truth, by presenting the idea of perspective-dependence. This means a consciousness of how the relation between abstract knowledge and concrete reality should be interpreted; something which is not thematized by the A and B teachers. The case of E is different in another respect too: experiences are not used as instruments in teaching but instead as a means of understanding why students comprehend the perspective-dependent character of knowledge in physics. This is described by Perry in an investigation of the development of Harvard students. He shows how the students change from a conception of knowledge that is absolute to a more relative view. Considering that consciousness of perspectives is a considerable step forward for students at Harvard, it is not difficult to understand that teachers seldom find it among students at the secondary level.

Conception D also pays attention to the perspective-dependent character of knowledge. In this case it is an explicit conflict model; school knowledge and everyday knowledge are juxtaposed. Here the world view - based on everyday experience has a negative role; it is something that should be broken down and eliminated, so that school knowledge can take its place. In this way, conception D gives experience an important role - but a negative one.

A prominent feature of our interviews is the gap between the experience of the student and school knowledge. When the teachers manage to relate experience to

school knowldge, it is always done on the premises of the latter. This knowledge is defined by the text books or the curriculum. The aim is not to explain phenomena in the surrounding world but instead to make the students understand the content of the books. For this reason. there is a risk of knowledge becoming unintegrated, non-personal, and thereby transient and useless in the world of action.

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8. PERSONAL EXPERIENCE AND THE CONSTRUCTION OF KNOWLEDGE IN SCIENCE

by

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Abstract

Significant Learning is likely to occur only if the 'facts' to be learned are construed by the learner as having personal relevance. Teachers need to be aware of the current perspectives of learners in order that experiences may be generated in which learners can reflect on their own views and recognise their role as theory builders. This paper suggests that a 'cultural transmission' approach to teaching and knowledge dominates Science Education and that this has neglected the role of personal experience in the construction of knowledge.

"Margaret Thatcher thinks she's scientific but really she's unscientific because nothing she does works..."

The above quotation is not intended to be a political statement although it could be construed as such. The quotation is an extract from an interview protocol of a Middle School pupil who has been asked to talk about what he meant by the term unscientific (Swift, 1981). In this paper I will argue that effective teaching relies on the teacher having some understanding of students' viewpoints. The personal viewpoints of science students are just as relevant as those of students of any other discipline. However, in the teaching of science in schools, it would seem that few teachers pay attention to and make use of the personal experiences and spontaneous reasoning of their pupils (Zylberstajn, 1980, Viennot, 1979).

If experiences in school are such that learning in science is seen as an impersonal and mechanical storage of facts and techniques we should not be surprised if students entering science courses in higher education, albeit with reasonable 'A' level grades, lack an inventive and personally committed attitude towards their studies.

Unless science educators re-examine their approach to the teaching of science there may well exist a gulf between current philosophy on the nature of science and the teaching events which are devised and from which students construct their experiences of the subject.

Gilbert and Swift (1981) suggest that the prevailing conception of science held by the public still appears to be a positivist, empiricist-inductivist one which bears a strong resemblance to Bacon's articulation of scientific method put forward at the beginning of the 17th century. Their observations support those of Cawthron et al (1978) that this view seems to be the image of science projected in schools today despite the fact that 'it has long been regarded as an inadequate account'. The Association for Science Education (ASE) consultative document *Alternatives for Science Education* (ASE, 1979) emphasised the current dominance of an inductive and rule following approach to science teaching in schools and suggests that alternative conceptions for curriculum design should be considered.

In considering alternatives teachers must bring under review their personal perspectives on the teacher's role, theories of development, learning, epistemology and philosophy of science. Pope and Keen (1981) look at some of the major themes inherent in differing educational ideologies and relates these to particular models of the nature of knowledge and the psychological development of man. We argued that a 'cultural transmission' approach has dominated Western education and that teachers of this persuasion would see the primary task of the educator as the transmission of information, rules or values which form the 'truths' of one's cultural heritage. In the extreme, their philosophical approach is that absolute truth can be accumulated bit by bit, subject by subject and their epistemological position is that of the Realist who views 'true knowledge' as knowledge that corresponds to the world as it is and that this knowledge is, therefore, independent of the subjective constructions of the learner.

Traditional teaching methods based upon the cultural transmission approach emphasise the student's role as the passive receiver of information rather than the active participant. The positivist, empiricist-inductivist conception of science is in sympathy with this absolutist view of truth and knowledge and thus if teachers hold to that conception of science then curriculum content and the manner in which students are taught will place little or no emphasis on the student's own conceptions and active participation.

The cultural transmission view of teaching and learning has been supported by psychological theories of development which stress the passivity of man's mind - associationism, behaviourism, stimulus-response psychology, etc. However, we have seen a paradigm shift within psychology and education resulting in a renewed interest in the individual's active processing. Knowledge is seen as being produced by transactions between a person and the environment and an emphasis is now placed upon the active person reaching out to make sense of events by engaging in the construction and interpretation of his/her own experiences.

Following in the traditions of Dewey, progressive educators have developed programmes to encourage students to develop an active approach to learning and the psychological theories of Piaget, Bruner and Ausubel have lent support to this movement. However, some feel that the pedagogy which has resulted still leaves a lot to be desired.

Postman and Weingartner (1971) made the point very forcibly:

> *"There is no way to help a learner to be disciplined, active and thoroughly engaged unless he perceives a problem to be a problem, or whatever is to be learned to be worth learning. It is sterile and ridiculous to attempt to release the enquiry power of students by initiating studies that hold no interest for them."*

The pupil or student can be active in the physical sense when conducting a closed-ended experiment but the learning derived from such an experience will be limited if the person can see no relevant links between the activity and their personal concerns. Many philosophers now reject the notion that knowledge and reason should be impersonal and detached and suggest that reason is informed by passion. It is not sufficient that a body of knowledge from a textbook or given out by the teacher is accepted unquestioning by the student. Students must find them true for themselves. They must be able to incorporate them within their views of the world. As teachers we should be interested in students developing their own criteria regarding the quality and relevance of ideas and allow this to develop by minimising our role as arbiters of what is acceptable.

Rogers (1969) emphasised personal relevance with specific reference to the learning situation. He differentiated between two processes in learning: *teacher-based* (the traditional cultural transmission approach) and *learner-based* learning. Learner-based learning is self-initiated, has a quality of personal involvement and is evaluated by the learner. The knowledge that evolves through this process is 'private' knowledge ie truth that has been personally appropriated. According to Rogers this 'private' knowledge cannot be directly transmitted from teachers to the student. Only if public knowledge is personally construed by the learner and has significant influence on his/her behaviour and attitudes will this knowledge become personal knowledge. For Rogers, personal knowledge is facilitated by a specific type of interpersonal encounter between the teacher and students - one in which the teacher has due regard for the concerns of the individual student, where status is given to students' views and an atmosphere of mutual trust is established so that students feel free to express their views rather than regurgitate imposed knowledge.

Kelly (1970) recognised learning as a personal exploration and saw the teacher's role as helping.

> *"To design and implement each child's own undertakings... To become a fully accredited participant in the experimental enterprise she must gain some sense of what is being seen through the child's eyes."*

What is relevant to the learner is of importance and for education to be a joint venture between teacher and learner it is essential that each has some awareness of the other's personal constructs. The following quote from Berman and Roderick (1973) indicates some assumptions re curriculum which are compatible with Kelly's viewpoint.

> *"Curriculum has long been thought of as that which is taught to somebody else. Persons act as though what is a fact one day is a fact the next, as though all persons perceive phenomena in the same way, as though the world is static rather than dynamic. The view of these writers is that curriculum must put the person at the centre of what is learned. Curriculum development...will then see the person as the meaning maker and plan curricula experiences which enable the child to consider, contemplate and expand his meanings."*

Emphasis on the person as the meaning-maker is now a dominant theme in educational theorising but in practice the phenomenological world of the learner is often neglected. In the teaching of social sciences we have seen some widening of curricula, loosening of subject boundaries, emphasis on the process as well as the product of learning, acknowledgement of the relativity of knowledge and the importance of the personal construing of the learner. Teaching strategies such as role-playing, simulation, group discussion, syndicate work and interactive lecturing have been employed to help students develop the links between their personal experience and concepts to be learnt. Through such strategies it is hoped that learning will be significant and that the student understands something about his/her emotional commitment to the area of social science as well as specific concepts which are part of the public knowledge of the discipline.

Unless we believe that knowledge in science is fundamentally different to that in social sciences then we could expect to see similar processes developed within the teaching of science. However, this does not seem to be the case (ASE, 1979).

Piaget's work is often referred to in the literature on science education, thus we might expect that science teaching would foster the conditions under which each pupil can think freely and stress the spontaneous, self-guided act of interaction with the environment through which Piaget believed the inner mental growth of each pupil develops. Wickens (1974) argued that Piagetian theory provided a model for open systems of education and in discussing the nature of the curriculum in such systems he suggested that:

> *"the relation of the classroom environment to the wider context of the learner's life must be considered, in other words, the inside-outside relationship of the open-system classroom with the outside world. Active involvement in the learning process depends on the child's interest in exploring the learning environment. Consequently, consideration of the child's interests and needs becomes a central issue for curriculum development in an open system."*

However, in many discussions on the significance of Piaget's views for Science Education the main emphasis is on the fixity of the stages of cognitive development.

Shayer and Adey (1981) have developed a series of instruments called Science Reasoning Tasks which they claim can be used to ascribe pupils to particular levels of cognitive development relative to the Piagetian stages. They suggest that there are significant areas of mismatch between the cognitive

demands of science curricula and the levels of cognitive development of the secondary school population. In a recent Times Educational supplement article with the headline "Learning is linked to spurts in development of brain", (Cookson, 1981) attention is drawn to the work of the Cognitive Matching Project of Brandeis University which seeks to relate the process of schooling to 'scientific evidence about the development of children's brains'. Shayer's work is cited as "providing evidence that children's cognitive development goes through four stages that correspond exactly to the physiological growth phases" and claims that his research has "shown that few children - less than a quarter - are capable of abstract, formal reasoning before their 14-16 growth spurt". This paper is not the place to engage in an extended critique of such reductionist movements however, I would argue that headlines such as the one above and the over-emphasis placed upon Piagetian stages are potentially detrimental if applied by teachers in a simplistic fashion. I think the danger is particularly acute in science education where it would seem the notion of Piagetian stages has taken root.

Shayer and Adey (1981) state "stage theory is essential to the Paigetian world view, and is its most distinctive feature." This view should not go unchallenged. Gruber (1974) an ex-Research Fellow of the Centre d'Epistémologie Génétique in Geneva states:

> *"How can we create a world in which a childlike thought would be treated with the respect it deserves? In which the child will know he has that respect? Perhaps this is the right way to read Piaget's work for its educational significance - not as a fixed chronicle of stages in the emergence of a specific inventory of concepts, but as the model of a man who respects children's thinking."*

Whilst Piaget would have welcomed the attention which science educators may give to the cognitive demands of their courses, he would have been less happy if the degree of structure is excessive. He criticised over pre-occupation with the idea of having to proceed from the simple to the complex in all domains of teaching as he noted that children's logic deals sometimes with undifferentiated, global wholes and sometimes with isolated parts and, therefore, we cannot always proceed from the analytic parts that to adults seem simpler than the whole. He also suggested that some people will reach the level of formal operations in some specific area that they know well without reaching formal levels in other areas.

Duckworth (1974), an ex-student of Piaget, describes her approach to the teaching of elementary science as based upon "an application of Piaget in the best sense." A fundamental assumption behind her approach is that:

> *"the more we help children to have their wonderful ideas and feel good about themselves for having them, the more likely it is that they will someday happen upon wonderful ideas that no one else has happened upon before."*

The "wonderful ideas" to which she refers are the creative intellectual acts which take place when new connections of ideas are made by the learner.

Despite the fact that Piaget was critical of those who took the theory of stages to be a series of limitations, this would appear to be 'the received view' of many science educators. I would argue that this has been at the expense of the essence of Piaget's epistemology ie the constructivist and relativistic view of knowledge in which the person's present construction of experiences forms the basis for the handling of new information and projections about future events.

The Relativistic approach to knowledge permeates recent scientific articles. Davies (1980), in discussing the implications of quantum theory writes - "it leads to the conclusion that the world of our experience - the universe that we ordinarily perceive - is not the only universe." He suggests that quantum theory "reinstates the observer at the centre of the stage...reality, inasmuch as it has any meaning at all, is not a property of the external world on its own but is intimately bound up with our perception of the world - our presence as conscious observers..."

This acknowledges subjectivity in science and falls within a constructivist frame. Koestler (1976) also draws attention to the personal nature of theorising in science and the affective component. He argues that it is a myth that scientists' reasoning processes are strictly logical and lacking in the sensuous and original quality of the poetic imagination. He coined the term "Bisociation" to describe the act of discovery in Science or Art which he distinguished from "pedestrian routine of association along beaten tracks". Such a process is followed by "an inaudible Eureka cry which combines intellectual illumination and emotional catharsis." The teaching of science should help to promote such experiences. In discussing Popper's philosophy of science Magee (1973) notes that "it puts the greatest premium of all on boldness of imagination....it is fundamentally at variance with all views of science or rationality which see these as excluding passion or imagination or creative instruction: and it condemns as 'scientism' the notion that science gives us certain knowledge..."

For Popper there is 'no pure disinterested free observation' as all observations are 'theory impregnated'. Whilst believing in the existence of 'real facts' independent of men, Popper is not an 'absolutist' in that he does not believe that 'objective knowledge of real facts' is ever attainable. As scientists we must approach every situation with the possibility of a radical transformation of our present conceptual scheme ie we should invite refutation. Kuhn (1970) draws attention to sociological and psychological components of knowledge and like Popper he adopts an anti-postivistic stance in discussing the revolutionary character of paradigm shifts in science. Kuhn suggests that new and old paradigms represent 'incommensurable ways of seeing the world and of practising science in it'. Paradigms are 'strong networks of commitments' and individuals who undergo a revolution of ideas may experience a crisis which involves emotional insecurity whilst the loosening of old paradigm restrictions and the contentions of alternative theories are considered. The old stereotype of the sober, reticent, controlled scientist who operates according to a set of definite norms and the view of science as a subject which is emotionally undemanding is giving way to notions of personal commitment in science. The modern scientist operates with a world view which is radically different from that of the Baconian scientist. The teaching of science should surely reflect this shift towards notions of constructivism and personal commitment in the development of scientific knowledge.

There is now the beginnings of an 'invisible college' of workers in the field of science education who are challenging the restrictive use of Paigetian models in science education and who wish to give due emphasis to the role of the student's personal experience in the construction of their knowledge of scientific concepts, their approach to scientific method and the 'alternative frameworks' they erect, (Driver & Easley (1978)).

The ASE (1979) consultative document suggested that alternative models in psychology, such as that of Kelly (1955), should be considered for their implications with respect to science education. Pope and Keen (1981) discuss the implications of Kelly's Personal Construct Psychology for education and the reader is also referred to Bannister and Fransella (1980)

for a further discussion on Kelly's approach. The choice is perhaps particularly appropriate for science education since he based his whole approach to the development of a person upon the metaphor of man-the-scientist. The Kellian scientist is a constructivist.

Kelly described his epistemological position as that of 'Constructive Alternativism' which suggests that people understand themselves, their surroundings and anticipate future eventualities by constructing tentative models and evaluating these against personal criteria as to the successful prediction and control of events based upon the model. He claimed that it is presumptious to assume that a person's constructions of reality are convergent with it and suggested that "the open question for man is not whether reality exists or not but what he can make of it" (Kelly, 1969). For Kelly any event is open to as many reconstructions of it as our imaginations allow. He rejected an absolutist view of truth and contrasted his position with that of Accumulative Fragmentalism ie the notion that knowledge is a growing collection of substantiated facts or 'nuggets of truth'. Even the most highly developed scientific knowledge can be seen as subject to human reconstruction since all theories and facts are subject ie they are man-made hypotheses which a person may choose to bring under review and revise in the light of what might appear to be a 'better theory'.

Kelly proposed that each person erects a personal representational model of the world which allows him/her to make some sense of it and which enables the person to 'chart a course of behaviour in relation to it'. These representational models are composed of a series of interrelated *personal constructs* or tentative hypotheses about the world. Constructs are used by a person to describe present experience and to forecast events (theory building) and also to assess the accuracy of previous forecasts after the events have occurred thereby testing and validating or invalidating their predictive efficiency (theory testing). Kelly's main emphasis is on the uniqueness of each person's construction of the world and the construct systems each will evolve and continue to evolve in order to import meanings on their experiences. 'Alternative frameworks' would be seen as sensible coherent expressions of this cognitive activity.

When applied to an educational context this constructivist view of knowledge lends support to teachers who are concerned with the investigation of students' views, who seek to incorporate these viewpoints within the teaching-learning dialogue and who see the importance of encouraging students to reflect upon, and make known, their construction of some aspect of reality. Education and the development of knowledge in constructivist terms invites the teacher and the student to go beyond what is given.

For Kelly successful communication between people depends not so much on commonality of construct systems but upon the extent to which people can 'construe the construct system of the other' ie the degree to which people can have some degree of empathy and understanding of someone else's constructs whilst not necessarily holding the same constructs themselves. There is now a growing group of science educators who argue that, for the teaching-learning dialogue to be effective, it is important for the teacher to come to an understanding of the pupil's frameworks.

Head and Sutton (1981) liken a construct system to a mosaic which changes with time and suggest that coherent areas of this mosaic contribute to a person's personal identity and that we should recognise that affective factors integrate with cognitive factors in the person's attempts to make sense of experience. They note the importance of listening to a pupil's spontaneous use of words when faced with novel experiences. They argue that when a pupil looking at a Bunsen burner says 'it's a sort of gas

candle' this interpretation is likely to be encouraged and developed by the teacher since it opens up possibilities for a unified view of combustion. Head and Sutton give another example of a pupil looking down a microscope at particles in Brownian motion who says 'it's like a lot of glow-worms'. This pupil's 'description' misses the essential passivity of the Brownian particles. However, as they point out, the spontaneous reasoning of both pupils are important since they are "experiments in ways of seeing and ways of talking about experience. To understand the growth points of a learner's cognitive structure we suggest that greater attention should be paid to them".

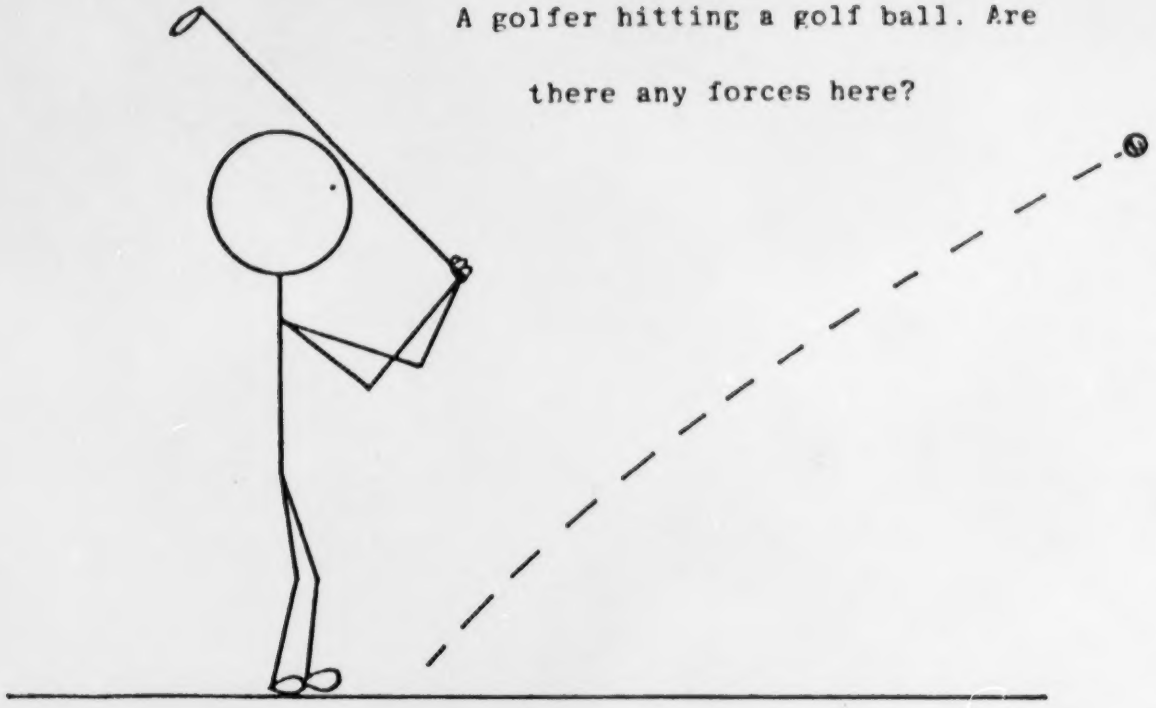
I have suggested elsewhere that Personal Construct Psychology and Repertory Grid Techniques based upon this approach offer teachers and learners a resource which will help them to reflect on their ideas and explore differing conceptions. Active involvement with their own and others' ideas may encourage learners to see themselves as a more potent force in the determination of their learning and the development of new knowledge. (See for example Pope 1980, Pope and Shaw 1981, Shaw 1980 and Pope and Keen 1981).

The Personal Construction of Knowledge Group (PCKG) at the IET, University of Surrey, have been particularly concerned to apply some of Kelly's notions and develop techniques consistent with his approach in order to explore schoolchildrens' and undergraduates' constructions of concepts in science. Watts (1981) has investigated secondary schoolchildrens' constructions of concepts in Physics using the Interview-about-Instances (IAI) approach, (Osborne and Gilbert, 1980). On the basis of this work Watts contends that children develop coherent internally logical conceptual frameworks based upon their own experiences which are very successful in explaining everyday events. In common with other PCGK members, Watts refers to these viewpoints as "alternative frameworks" rather than dismiss the ideas as "wrong" or "misconceived". We believe that due status should be given to these attempts by pupils to explain their experiences (cf Duckworth's comments on 'wonderful ideas').

The IAI method involves generating a series of cards on which there are drawings representing situations in which concepts in science are depicted. Some cards include situations which contain an instance of the concept under investigation whereas others do not. The cards are used as an initial stimulus to generate a conversation and the teacher/researcher pays attention to the pupil's own language when describing the cards.

On the next page is an example of an IAI card and an extract from the transcript of a conversation about the card in relation to the concept of force. The boy interviewed was about 14 years old and considered to be a good 'O' level examination candidate by his teacher.

A golfer hitting a golf ball. Are there any forces here?



R he's forcing it on the ground . forcing the golfball for when he hits the . golf club onto the ball . um there's force on the ball and that sends the ball away.

I mmm mmm and so if you were just talking about forces on the ball at the moment?

R yes

I what would you say was there?

R . well its still got force of the golf club as its still going along . hmm and you've also got force of gravity pulling back down to the ground again

The scientist's view would be that there is no 'driving' force on the golf-ball in mid air. It has gravity and the friction of the air and these result in a combined force that acts against the ball. The 'driving' force on the ball ends as soon as it loses contact with the face of the club. However, you can note from the verbatim transcript that the pupil still thinks that the ball has 'got the force of the golf club as it is still going along'. The student's view and the scientist's view are clearly at odds and this would be a situation where a negotiation between the two viewpoints may be instigated by the teacher.

Watts notes that from the observer's point of view some of the children's descriptions seem apparently contradictory or mutually exclusive but "they seldom seem to possess any conflict or concern to the pupil's who advance them". It would appear that these alternative frameworks are plausible and fruitful for those who hold them. If the teacher wishes to encourage the pupil to adopt a 'scientist's science' conception of, for example, force or gravity, then experiences need to be provided for the pupils so that their alternative frameworks can be challenged and the scientist's viewpoint seen

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to be more intelligible, plausible and fruitful than their own conception and thus conceptual exchange take place (Hewson, 1980).

Interview data produced by the IAI approach shows a pattern of five possible outcomes when 'children's science' ie the understanding that children bring with them to the science classroom interacts with 'teacher's science', (Gilbert, 1981). One outcome is referred to as "the two perspective outcome" in which the 'teacher's science' view is rejected as a personal model but the teacher's science may be learnt by rote. For example, in the middle of an IAI sequence a student was asked for a definition of force and the reply was:

> *"Oh now I've got it...a force is an action or reaction (laughs) that what they (teachers) always gives us...well they normally give examples that are easy to explain...but I don't get it... If I push the wall I can't see how it can possibly push me back'*

The student does not find the Newtonian contention that 'action and reaction are equal and opposite' to be plausible in his terms but gives evidence within the interview of being able to use the language of science.

We must not see interest in learners constructs as being confined to the teaching of schoolchildren. Posner (1981) stresses the need to consider college students' preconceptions, purposes, values and conceptions of past experiences which they bring to particular curricula tasks. He points out that college students' preconceptions can be resistant to change because they may have been acquired through interaction with the physical world without formal instruction and are "therefore very functional in and adaptable to most circumstances". These preconceptions not only categorise students entering college physics courses but "often those 'successfully' completing these courses". Posner suggests that students may simply compartmentalise their knowledge "claiming that the problem is a physics problem and therefore does not have anything to do with the 'real world '". I believe that many students may be 'turned off' science because of this perceived gap between the content of science lessons and their own world views.

There are many areas of the science curriculum where it is impossible to organise direct physical experience with exemplars of the concepts. However, the use of group discussion, metaphors and analogies which can link with instances in the experiential world of the student could be used to engender the active, deep-level and committed cognitive processing through which a student may give meaning to scientific concepts and decide to accept or reject the 'official science' viewpoints.

Nussbaum and Novick argue that when a student uses a naive 'alternative framework' or preconception to interpret classroom experiences he may well give them meanings which are different from or in total conflict with those intended by the teacher. The learner may be unaware of this gap and the teacher may assume that the student is 'not understanding' the lesson. They argue that "it is not a matter of his 'not understanding' but of his 'understanding differently' from what was intended. He may very well give sophisticated and rational meaning to the new information, despite the variance with accepted meaning". For them, the teacher's task is to expose pupils' alternative frameworks and create situations which will encourage them to confront the official science viewpoints. They present a case study of a teaching situation in which brainstorming was used with a group of 12 to 13 year olds in an attempt to encourage them to invent a particle model for gases. The pupils were encouraged to verbally and pictorially describe their alternative frameworks, to confront each other's viewpoints and debate the pros and cons of the different frameworks offered. The pupils were asked to test the ideas inherent in their alternative frameworks against

experimental observations and this gave them the opportunity to decide for themselves whether there was a need to modify or change their ideas in order to eliminate any contradiction between their theories and their experimental observations.

Osborne (1981) describes a single-lesson procedure where students are encouraged to think about a proposed investigation and predict, using their own conceptions, what is likely to happen. This is done individually and then students work in pairs or groups to perform and/or watch the investigation, record their observations and discuss their observations in their own terms. In a plenary session the variety of explanations produced are thrown open for general discussion and then, again working in groups, the students devise and conduct experiments to test these explanations. Further plenary sessions are held to discuss the outcomes of these experiments and relate the student's conclusions to everyday examples and technological applications.

This type of teaching procedure is far removed from the normal closed-ended laboratory experiments which students are usually required to conduct. However, I would argue that such procedures are necessary if students are to gain a sense of personal involvement in the study of science. If we wish to effect a transition from student's science to scientist's science, experiential procedures and open-system approaches seem to be necessary since it is clear that merely telling the students a correct answer, couched in the language of high science, is ineffectual (Driver, 1973).

Hewson (1980) argues that a person who is faced with a new conception is not going to incorporate it without good reason particularly if it is at the expense of an existing conception which forms part of his/her central commitments. He suggests that some of the most important of one's central commitments are metaphysical in character and in his paper he elaborates on the role played by a person's metaphysical commitments by presenting a case study of a graduate student having to make sense of the counter-intuitive theory of relativity. Once again Hewson is stressing the need for the teacher to know the initial conceptions of the students he or she is teaching - "particularly those which are implicit and inarticulated" - before planning an appropriate teaching strategy to encourage transition to scientist's science.

I think that there is a need to extend the range of teaching approaches in the area of science education - perhaps based on repertory grid techniques, interview-about-instances or other conversational approaches. Gilbert and Osborne (1981) have already developed IAI workshops for teachers.

Such experiences may help the teacher to come to an understanding of the student's framework, the student will be exposed to a range of alternative frameworks held by the teacher and his/her peers. This interchange of ideas should help communication as well as offering a further range of experience within which the student may construct his/her personal models. We cannot predict that the outcome would be a full transition to scientist's science. Sometimes the students will hold on to their own perspective whilst at the same time temporarily adopting another perspective (cf the 'two perspective outcome' which was mentioned earlier).

The student may choose to see his/her model as being invalidated and replace it with another model - the replacement model could be that of the teacher or a fellow student. Another course of action could be that the person resolutely holds on to the original model and rejects those of others - however he/she will now have a better understanding of the other perspectives. The fourth outcome of such a process of communication, sharing and subjecting

of one's own ideas to review could be that a student discards his or her previous model, rejects all the other models put forward by members of the group and erects an alternative model which goes beyond any of the models proposed. The fourth outcome may well be one of the more desirable outcomes should the alternative model prove to be a fruitful one for explaining events. The development of science depends on people having the courage to go beyond currently accepted notions. We must support courageous exploration of ideas and help students to develop a sense of agency with respect to the construction of knowledge.

For Kelly the construction of reality is a subjective, personal, active, creative, rational and emotional affair. If we are to believe modern philosophers of science then similar adjectives can be applied to scientific theorising and methodology. However, students' experiences of science in schools and colleges do not appear to be developing this viewpoint.

At the beginning of this paper I gave a quotation from a Middle School pupil. Some further quotes may be of interest.

- *"things which are unscientific are lies'*
- *"unscientific means the man could have cheated'*
- *"unscientific means easy things like P.E."*

(Middle School pupils)

- *"...areas of study which lack logic and objectivity"*
- *"unscientific theories are myths...they show what people want to believe rather than what is true"*
- *"unscientific means a theory where the inventor has filled in the gaps between the facts but has not admitted this publicly"*

(Undergraduate Science students)

- *"...subjects which do not have this technique do not deal with facts. The technique I am talking about is of course the scientific method..."*

(Postgraduate student)

The above quotations are but samples from a series of interviews conducted by David Swift, a member of the PGKG. Many of the students interviewed commented that they had found it most useful to have been asked to consider what their own views about science and scientific method were as this was something they had not been asked to do before. We may not expect Middle School pupils to have considered what their views of science actually are. However, one could surely have expected that undergraduates and postgraduate students would have been confronted with such questionsbefore this stage in their education. Talking about one's ideas is "one of the most powerful provocations to sorting out what you understand" (Sutton, 1981).

West (1981) raises what I think is a vital question for every science educator to ask of themselves. Their answers will determine the nature of the experiences which they promote for their students and in the longer term will enhance or restrict the development of scientific knowledge.

> *"If schooling is to be based solely on the transmission of bodies of agreed knowledge it will become a mechanistic and non-educational activity. I suspect we can all get together and reduce Biology to its basic components; Chemistry to a handful of concepts; Physics to a principle or two;...Without too much dissent I have no doubt we can create an Agreed Syllabus of School Level Scientific Knowledge that, like that in Religious Education, will allow no room for deviant values, alternative interpretations, or the possibility of a different religion... but is this how we wish to, or should, present it and encourage young children to learn it?"*

If public knowledge in Science has any hope of becoming integrated with the personal experience of students then the answer must be 'NO'!

If we wish to avoid the situation where persons whose education is predominantly scientific are among the most conformist and unquestioning members of the community who seek pedestrian solutions to problems, then a change in strategy may be needed. As Wren-Lewis (1974) said "the truly educated scientist is one who has the future not only in his bones but in a responsibly imaginative head and an informed heart". In order to achieve this,recognition must be given to the role of the learner's personal construction of experience, and the development of the skills of talking about one's ideas and listening to the conflicting opinions of others.

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9. A NEW CLIENTELE FOR HIGHER EDUCATION: THE COOPERATION BETWEEN THE UNIVERSITY OF KLAGENFURT AND THE AUSTRIAN WORKERS UNION

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Abstract

This paper is concerned with the problems of the cooperation between the University of Klagenfurt and the Austrian Workers Union in further education at university level, e. g. the implications of this model on the nature and structure of the university.

The cooperation between the University of Klagenfurt and the Workers Union started at the beginning of the academic year 1980/81 and intends to offer university courses to larger groups of people interested in further education at university level. The opening of the university is motivated by reasons of educational policy as well as of planning in higher education.

For the university the implications of the procedure can be seen in ideas and directions for fundamental development (philosophy of higher education) as well as particular innovations.

1. Introduction.

In the past decades Austrian universities have undergone a phase of decisive changes, as e. g. : the functional changes of academic instruction in a highly industrialized working society, the increasing importance of research and scientific instruction to the country's civilisatory (economic, cultural, political, social) development, the increasing access of students from the upper and lower middle classes to higher education and a general economic prosperity that created the basis for an educational expansion.

Significant indicators of this Austrian educational expansion were the great extention of the higher secondary schooling and the establishment of new universities (Salzburg, Linz, Klagenfurt) between 1963 and 1970. Structural and organisatory developments of universities were laid in the "Allgemeines Hochschul - Studiengesetz" (AHStG, 1966) (=General University Study Act), which was the legal basis for a new organisation and arrangement of the course of studies, and in the Universitäts - Organisationsgesetz (UOG, 1975) (= University Organisation Act), which reformed the administration and organisation of universities.

At the 12 Austrian universities and the 6 art academies about 130.000 Austrian and foreign students are registered today (as compared to 19.000 registrations in 1955/56, 49.000 in 1965/66, 80.000 in 1975/76). A staff of about 6.000 professors and assistants as well as a considerable number of external lecturers are in charge of them. (1)

Among the main problems our Austrian universities are facing are: The rising administrative burden and the additional stress the scientific staff has to tackle on account of it; the difficulty of financing large - scale research projects (a problem many a small country is facing, too) connected with a trend of moving research out of the universities; the great number of drop-outs (only about half of those registered finish their studies) (2) and, something that partly results from what has just been said, the demand for a second reform phase in the field of studies and instruction (3), as well as a stagnation of the scientific staff of universities since the early 70's with a considerable simultaneous increase in the number of students. According to prognosis the number of students will increase until 1987; from then on - on account of the decrease of births since 1964 - the number will shrink. (4)

Since accourding to international expectations - the large affected universities in highly populated cities might be less affected by the prognosticated decrease of the number of students than smaller and younger institutions, especially these need to look after their chances of development by means of finding and increasing new potential student populations. (5)

All those questions are inseparably connected with a change of the idea of a university being an institution to instruct a small elite to that of an institution of mass instruction. In this connexion, we recognise an increasing scientific reflection of status, tasks and function of the university. (6)

Before the background of such basic questions concerning Austrian universities, the cooperation of the University of Klagenfurt with the Austrian Workers Union (Österreichischer Gewerkschaftsbund, ÖGB) is to be seen a cooperation through which the university systematically tries to include large groups of our population into further academic education. We shall now try to illustrate the aims and modalities of this cooperation, thus giving a concrete example of systematic university instruction for adults and to find out the consequences resulting from it for the status and the function of universities.

2. The Cooperation between the University of Klagenfurt and the Austrian Workers Union.

2. 1. The educational policy and its legal basis.

According to their tradition Austrian universities are basically indebted to the ideas of Humboldt's conception (education through science, connexion of research and instruction, autonomy of universities, intercourse of teachers and students) and constitute the highest level of our hierarchic system of education. The increasing demand for education as well as an increasing demand for highly qualified specialists connected with the above-mentioned quantitative development have resulted in the fact that the universities have gradually given up their exclusivity and have opened themselves to a certain extent to society, its needs and demands. In the recent years the Austrian universities have regularly exhibeted their work to a wider public (scientific fairs, public days etc.) and the endeavour to offer university courses, public symposiums of a scientific and cultural kind as well as university lectures for further education in addition to the ordinary study programme. Their efforts and the intentions of the scientific state administration which principally supports the opening up of universities and gave them the legal order "to serve scientific research and instruction, thereby responsibly contributing to the solution of the human society's problems and to the benificial development of it." (7)

Yet, the recognizable opening up of Austrian universities in certain fields has other courses, too, courses beyond those of educational state and university policy. The rapid development of knowledge and the high requirements upon the intellectual and professional mobility of economic and administrative managers has brought aoubt a demand for the installation of highly qualified further education, a demand that has largely been met by academy - like institutions set up during the last 15 years (Academy of Management, Federal Academy of Administration, Educational Academy of the ÖCV, Boltzmann - Institute etc.) Such institutions have, as it were, become rivals in the fields of education and instruction so that today the question seems justified whether the universities will be able to maintain their monopolistic position in the educational system. A rivalry similar to that in the academic field of further education has arisen to Austrian Universities in the field of research by various research institutes, especially industrial ones.

Only in the field of ordinary studies can - on account of the existing legal situation - not only arise no rivalry, the universities even have the legal possibility to make lectures form among the regular study programme avialable to an interested public audience. The relevant legal regulations are as follows: "The university and its equipment are basically open not only to members of the university but also to any person - according to the possibilities and the qualification of such a person - interested in the scientific fields the university offers. /.../ Anyone may - even without registration - attend lectures." (8)

The possibilities created by means of such legal measures have so far been used rather sporadically by a few interested ones. Now, on the basis of such regulations, the University of Klagenfurt is offering selected lectures to a particular group of persons, i. e. the members of the Austrian Workers Union in Carinthia, thus trying to attract a new student potential and offering an additional contribution to the regional academic instructions.

2. 2. The partners and their intentions.

2. 2. 1. The University of Klagenfurt.

The basic patterns of possible developments of the University of Klagenfurt partly follow the framework of international or all-Austrian trends, but partly they are also distinctly specialized. In view of the particular topic, I consider the following patterns most important:

- o The University of Klagenfurt, which was founded in 1970 as a University of Educational Sciences, considers educational research and its application in the development and reform of Austrian schools and education as one of its essential tasks. From the beginning, an increased offer of lectures of further education (courses, meetings, conferences) tried to meet this demand.

- o The University is still in a state of diversification and completion, in research as well as in instruction; this development is somewhat limited by

  - a lack of economic prerequisites
  - a very limited number of subjects
  - too great a number of regional academics in the study fields offered by our University
  - the geographic position at the border (linguistic frontier) and the limited drainage area for students resulting from it. (9)

The cooperation of the University of Klagenfurt with the Austrian Workers Union in the field of university adult education is based upon the following expectations and motives - the so - called self-interests that form the basis of such a cooperation (10):

- o the intention to open up the university to wider groups of people

- o the necessity for further expansion of the university by new and additional forms of courses offered in view of the difficulties of the above-mentioned limits to a diversification and completion in the classical fields

- o the endeavours to increase the number of potential students in view of a decline of the number of students from the second half of the eighties on.

2. 2. 2. The Austrian Workers Union.

The Austrian Workers Union (Österreichischer Gewerkschaftsbund, ÖGB), the legally private, voluntary society of Austrian employees is the most powerful political group in Austria, comprising 1,6 million members (membership fees about 1,300 million Austrian Schillings p. a.). On account of its own enterprises, of shares in various firms and, above all, if its officials legal right to have a voice in factories and other places of work, it is also an important economic power. Its political power can be best recognised by the fact that the Federal President, the Federal Chancellor as well as most of the Ministers of our Republic of Austria are members of it. At present

the President of the Workers Union is also President of the National Assembly, the highest legislative body of the Republic of Austria. In the Federal Province of Carinthia (with about 550.000 inhabitants), 95.485 persons (as from Dec. 31, 1980) from among about 170.000 employees are members of the Union. With one exception, all members of the Carinthian Diet - irrespective of their party membership - are members or officials of the Workers Union, including the Governor of Carinthia. According to their professions and trades, the members (workers, salaried employees, officials) and organised in special branches. Their educational background and qualifications are rather heterogeneous.

In conformity with its regulations, the Workers Union and its branches deal with economic, political, social and cultural tasks, at the same time offering varied educational programmes of a general and vocational nature, programmes that may be partly used even by non - members. The Union's educational policy is aimed to improve the level of education of its officials and members on one hand, on the other it is to encourage socio - political developments by means of reforming federal education, which also includes universities. Such developments are to improve the educational level of the masses. Here there is a tension between the ideal aims of the Unions educational policy with regard to mass education and the actual requirements of the Union's aims which are to train its officials as well as possible (formation of cadre and elite). For educational and training purposes of officials, the Union has extensive institutions at its disposal. However the demand for mass education - which, above all, includes the educational offer to the numerous members - can only be met by using the federal institutions of education. (11)

For the Province of Carinthia the cooperation with the University of Klagenfurt extends the educational offer by a package of programmes of adult university instruction, specifically in the field of general adult education and also in that of learning foreign languages.

2. 3. The modalities of cooperation. (12)

The cooperation between the University of Klagenfurt and the Austrian Workers Union is the first attempt to arrange a systematic cooperation between an Austrian university and a private organisation in the field of university adult education. The common educational intention being to make university instruction available to a large number of persons. The university offer is divided into two parts:

a) General Lectures:

After consultation with the Union, the university chooses a number of lectures from among its regular programme - lectures suitable for general adult education, i. e. lectures for which a great demand is to be expected from an interested public. In the summer term of 1981, 31 lectures from the subjects Philosophy, History, Art, Psychology, Sociology, Media, Languages and Geography were chosen from among the 520 lectures at the University of Klagenfurt. The following titles could be found among them: "The Philosophy of the Middle Ages", "Russia at the Time of Imperialism", "Problems of the Labour Market Policy", "Educational Processes and Media", "Applied Geology" etc.

b) Language Courses:

In the same way, those language courses are selected from the general programme that are of interest to a wider public. In the summer term of 1981, six courses were offered to beginners of Italian, French, Spanish, Slovene, Serbo - Croate and Russina.

The educational department of the Workers Union in Carinthia offers the attendance of such lectures to their members directly with relevant informative materials, thus making available to them a considerably enlarged offer of instruction. This publicity financed by the Union itself means to the University essentially an extensive information on possible university instruction. Apart from interested single persons who have studied the university programmes even without publicity according to the above - mentioned legal possibilities, at the same time this activity raises hopes to interest systematically the largest group of organised persons in the Province (almost 100,000 persons) as potential students. The attendance of lectures is - as it is for all students in Austria - free of charge, i. e. it is financed by the state from revenues. We might add that the present state of cooperation hardly causes any costs of the project.

The attendance of lectures does not entitle the student to get some certificate, but is also not necessary for him to have completed some secondary school or any other basic education. For such external students, neither a formal graduation nor the possibility of getting a certificate is provided for, but they may get some written confirmation of their having attended the lectures.

The cooperation of the University of Klagenfurt with the Workers Union in the field of adult university instruction has been in operation since autumn 1980. The experiences of the first year prove that the offer has so far been accepted by about 50 persons, which is about 3 per cent of the number of regular students (about 1,800). The partners hope that the number of such students will rise in the next few years, especially since the capacity of lecture - rooms and university equipment can still take more students.

3. Problems arising from this Cooperation.

a) As has been shown above, it is such lectures that are in the first place included in the programme of adult university instruction whose contents are of general scientific, creative or cultural interest or whose standard is rather introductory, so that it has been conceived mainly for beginners. Since external students attend such lectures together with the other students, it is obvious that problems of the level of the subject matter offered will result, the more so as in Austria a considerable basic knowledge is usually required when attending university lectures. Practice proves that the programme offered is mainly attended by persons who can boast on an average or higher level of education. And yet, university teachers are facing the problem of who to prepare the contents and didactics of their lectures in a way so as to enable even persons with a weaker educational basis to participate actively. On account of the hitherto rather little demand, this has certainly not yet become a main problem, but considerations will have to be

made as to whether it might not be useful - providing the demand is adequate - to offer certain lectures whose standard is especially adapted to that circle of students. This would mean that teachers would have to offer a generally understandable scientific manner - subject to the general realisation of such a requirement - and to prepare didactically. Such a kind of "processed science" might subsequently be disseminated via the media - compound (in Klagenfurt there is the 'Interuniversitäres Institut für Fernstudien' of Austrian universities).

b) A second complex of questions results from the status and legal task of Austrian universities, the connexion of research and instruction, a task that derives from the idea of the students' share in the process of research. Since a share in the research process is impossible without a relevant basic knowledge or can only be realised by a continuous cooperation in asking questions and solving them within the framework of the university's research activities, students who make use of an isolated offer of lectures only for the purpose of a general knowledge will be excluded from such a possibility. Since the educational task 'education through science' can also only be realised by having a share in the process of research, students in the field of adult education are virtually placed outside the university's educational mandate. This raises the question of whether the university's adult education - as seen from the viewpoint of a comprehensive claim for university education - is not only a desideratum of something that 'education through science' is normally obliged to offer? Thus, a consequent extension of university adult education would necessarily result in a substantial change of the university's principles, and it would more than ever give axioms like 'education through science' and 'connexion of research and instruction' the status of ideal demands that can, however, not be realised.

c) A third complex of questions concerns academic self - administration. As those who attend lectures conveying general knowledge are no regular students, a participation in the proportional set up of university committees is impossible. Thus, they are placed outside a principle of political university education, which is at least partly realised by means of a cooperation of students in the committees of academic self - administration (research, instruction and management).

4. Summary

The cooperation of the University of Klagenfurt with the Austrian Workers Union in Carinthia in the field of university adult education is based upon the mutual educational - political interests of a certain opening - up of the university and becomes feasible on account of a relevant legal provision that provides for such an opening. Besides the intentions of the University of Klagenfurt result from endeavours to exhaust all possibilities of diversifying this young and small university. This cooperation with the most important private political partner in Austria may directly attract a potential number of almost 100.000 students. No separate offer of programmes is made for those students by the university, but selected lectures are offered from among the regular study programme. Some 50 persons made use of this offer per term in the first academic year.

From the discussion of problems and results of the systematic opening - up of the University of Klagenfurt in the field of adult education, we learn that by means of the cooperation with the Workers Union a new student population is certainly gained, yet this group of students is mainly kept outside the educational principles of the university ('education through science', 'connexion of research and instruction', student participation in the university's self - administration). In this connexion, all questions of integrating the students into the comprehensive educational mandate are still to be discussed.

5. Annotations.

1) cf. Hochschulbericht 1969, 1972 (vol. 1, 2,), 1975, 1978. Ed. by the Bundesministerium für Wissenschaft und Forschung. Wien 1969 ff.

2) cf. Die Hochschulen in Österreich. OECD - Länderprüfung. Bd 2. Wien 1976. S. 51 f. - Erich Leitner: Current Trends in Austrian Higher Education: the Call for a New Reform. In: European Journal of Education 14(1), 1979, 59 - 67.

3) A decisive initiative to continue the study reform has been aimed at for years by the Hochschuldidaktischer Ausschuss der Österr. Rektorenkonferenz (University Didactic Committee of the Rectors of the Austrian Universities, Chairman: Univ. Pof. Dr. E. A. van Trotsenburg). - cf. Österr. Rektorenkonferenz (Hg.): Beiträge zur Studienreform I. Vorkonferenz: Studienreform 2. Phase. Wien 1977. - Österr. Rektorenkonferenz (Hg.): Beiträge zur Studienreform II: Studieneingangsphase. Wien 1978.

4) As to the prognosticated development of the number of students cf. Hans Joachim Bodenhöfer et al.: Finanzierung der Hochschulexpansion. Klagenfurt 1978. (Mskr. verv.) - as to the development of the number of university teachers cf. Erich Leitner: Zur Personalsituation an den Österreichischen Universitäten. Inhaltliche und quantitative Analyse einer Schlüsselfrage der Hochschulentwicklung. In: Zeitschrift für Wissenschaftsforschung 2, 1980, 477 - 492.

5) cf. Peter Jockusch: Hochschulplanung 1990 - Problem oder Chance? In: Deutsche Universitätszeitung 1979, H. 21, 674 - 679. (paper originally presented at the OECD - Seminar: Current Developments in the Planning and Control of contemporary Higher Education Institutions. Zürich, Sept. 10 - 12, 1979.)

6) cf. Die Hochschulen in Österreich. OECD - Bericht 1975. Bd 1. Wien 1975. esp. S. 252 ff.

7) Universitäts - Organisationsgesetz (UOG), BGBl. Nr. 258 v. 11. 4. 1975, § 1, Abs. 1.

8) ibid. § 104, Abs. 1, 2.

9) On the student population in Klagenfurt cf. Paul Kellermann: Hochschulzugang und Studium in Kärnten. Forschungsbericht. Klagenfurt 1977/79.

10) As to the importance of self interests in academic adult education cf. among others Walter Blumberger: Kooperation von Erwachsenenbildung und Universität. Überlegungen zur Interessenslage. In: Zeitschrift für Hochschuldidaktik 4, 1980, 636 - 645, esp. 639.

11) On the educational policy of the Workers Union cf. among others: Österr. Gewerkschaftsbund (hg.): 9. Bundeskongress des ÖGB: Bildung, Kultur, Medien. Wien 1979. - Hans Thomasser: Die Bildungsarbeit des Österreichischen Gewerkschaftsbundes dargestellt an den Gewerkschaftsschulen in Kärnten. Diplomarbeit. Linz, Univ. 1980. esp. p. 38 ff.

12) The statements in this chapter are partly based upon the correspondence between the University of Klagenfurt and the Austrian Workers Union concerning a possible cooperation. I am most greatful to Prof. Dr. Günther Hödl, Rector of the University of Klagenfurt, to his permission to peruse the letters.

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